CASE REPORT

Complex rectal and anal canal injuries secondary to unusual blunt perineal trauma

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SUMMARY

A 27-year-old woman sustained a trauma to her perineal area when she was ejected from a jet ski while riding on water at high speed. The patient presented to the emergency department with blood streaking from her anal canal. Imaging revealed pneumoperitoneum. Surgical intervention showed complex anal canal and rectal injuries. Primary repair of the injuries was performed. Postoperatively the patient did well and was followed up with no evidence of residual symptoms and with a continent anal sphincter.

BACKGROUND

This case is unusual in terms of the mechanism of the accident and the complex combined anal canal and rectal injuries. The patient was treated with primary repair for both injuries with excellent results and no residual symptoms.

CASE PRESENTATION

Our patient is a 27-year-old otherwise healthy woman who was involved in a recreational jet ski accident 4 h prior to presentation. She was travelling at around 50 km/h when she was ejected; she landed on the water surface in a 'sitting' position at high velocity. This resulted in severe trauma to her perineal area. There were no signs of any associated injuries, or evidence of an impact against any solid object. After the accident, the patient went home asymptomatic and later noted blood streaks per rectum. She had no abdominal pain or other symptoms at the time.

Four hours after the accident she presented to the emergency department with blood per rectum and associated mild lower abdominal pain. She was haemodynamically stable, and had no visible injuries. Advanced Trauma Life Support protocol was followed and focused assessment with sonography for trauma examination was non-revealing.

On physical examination, there were no peritoneal signs. However, the patient was found to have clotted blood streaks and a rectal mucosal laceration at 2 o'clock in association with a weak sphincter tone. Vaginal specular and digital examinations were normal.

The patient was transferred directly to the operating room, where rigid proctosigmoidoscopy revealed a full thickness distal rectal tear around 5 cm in length, involving the internal and external sphincters. Primary repair of the sphincters and mucosa was performed with interrupted 2.0 chromic sutures and 3.0 chromic sutures, respectively. Five centimeters higher, a separate wound was identified, which on further exploration revealed a full thickness perforation.

INVESTIGATIONS

A CT scan with intravenous and per os contrast was ordered and it showed a rectal perforation with retroperitoneal air and fluid.

TREATMENT

The patient underwent an exploratory laparotomy and intraperitoneal rectal injury with stool spillage was noted. Heavy irrigation was performed and the perforation was primarily repaired using 3.0 polydioxanone sutures. A Hartmann's procedure with proximal diverting colostomy was performed. The patient had an uneventful postoperative course and was discharged home 6 days later.

OUTCOME AND FOLLOW-UP

The patient subsequently underwent a follow-up anorectal manometry study documenting physiological rectal tone. Two and a half months later, she underwent an uncomplicated takedown of her colostomy and had a complete and uneventful recovery.

DISCUSSION

Perineal trauma can be very complex especially when it includes composite fractures, intra-abdominal and genitourinary injuries. We report on a rare mechanism of trauma leading to a complex injury including combined retroperitoneal and intraperitoneal rectal perforation and involving a full thickness sphincter laceration. These injuries were caused by blunt trauma to the perineal area when the patient was ejected from her speeding jet ski, hitting the water surface at high velocity.

To our knowledge, this is the first report of a rectal injury caused by this sort of accident.

To explain the injury, we postulate that a high pressure water wave or jet travelled through the anus, lacerating the sphincters and exerting excessive force against the walls of the rectum. The sudden and excessive increase in intraluminal pressure in a system with limited compliance caused rectal rupture at the anchored rectosigmoid junction. This theory is supported by the finding of large amounts of fluid in the abdomen at exploration.

Early diagnosis of rectal injury is crucial. CT has been shown to be the gold standard study for the evaluation of blunt abdominal trauma in haemodynamically stable patients.[1 2] Evaluation of sphincter involvement remains a challenge. Many reports have advocated the high accuracy 80–95%[3] of digital rectal exam (DRE) combined with

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proctosigmoidoscopy in patients with a high suspicion of sphincter injury.[4] It is important to note that a significant 15–20% of rectal injuries can be missed with the performance of DRE, proctoscopy and even intraoperative assessment. In our patient the CT findings were diagnostic of perforated bowel mandating an emergent laparotomy.

There is inconsistency in the management of rectal injuries and the ideal surgical approach remains debatable with no clear guidelines or algorithms. This is especially true concerning the 4 D's of rectal injuries management, namely: divert, drain, direct repair and distal washout. Therefore, intraoperative decision-making is greatly affected by the surgeon's experience and preference. One approach to rectal trauma is described by Weinberg and colleagues from UT Memphis, basing algorithms on anatomic distinction. They recommend treating intraperitoneal rectal injuries identically to colonic injuries with primary repair when feasible. Primary repair is advocated with or without diversion for extraperitoneal injuries to the proximal two-thirds of the rectum, and primary repair with proximal diversion for accessible injuries to the distal third of the rectum. Inaccessible distal rectal injuries are best treated by proximal diversion and presacral drain placement. This approach has been shown to reduce the need for colostomy, decrease infectious complications (from 13 to 0%) as well as retrorectal abscesses.[5]

The bulk of the literature on the surgical management of anal canal injuries comes from the obstetric experience. Sultan[6] have proposed a classification system according to which our patient was placed in the most serious category: grade 4. In this situation and with the association of intraperitoneal rectal injury, the safest approach was primary repair of anal sphincter and colonic diversion to decrease the risk of morbidity such as fistula formation. Moreover, in cases of delayed diagnosis of large bowel perforation, Hartmann's procedure is safer and more effective.

We took down the colostomy 3 months after the initial operation. Multiple tests of rectal tone were also used. Defecography and anal tonometry showed normal sphincter tone and normal functioning.

Learning points

- The high pressure impact of water secondary to falling on its surface at high speed could result in devastating injuries.
- Proctosigmoidoscopy is highly recommended under general anaesthesia when there is suspicion of anal canal injury.
- Primary repair of intraperitoneal rectal injury with Hartmann's procedure is a valid option when the injury is acute.

Contributors MAEL was involved in literature review and writing the article. KR operated on the patient. GAS operated on the patient and reviewed the article. RN reviewed the article.

Competing interests None.

Patient consent Obtained.

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