

Case report

Spontaneous extraperitoneal rupture of the rectum

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SUMMARY

Spontaneous extraperitoneal “rupture” of the rectum is an extremely rare event not previously documented in the literature. We report the case of a 70 year-old lady who presented with intense lower abdominal pain. No predisposing or provoking factors were found in our patient despite detailed questioning apart from chronic constipation. A sudden increase of intraabdominal pressure was presumed to be the cause of rectal rupture.

Key words: spontaneous, repute, perforation, rectum, sigmoid colon

INTRODUCTION

Spontaneous rupture of the rectum, especially extraperitoneal, is an extremely rare insult, which requires urgent surgery. Since 1827, when Brodie reported the first case of spontaneous rectosigmoid rupture, 132 cases have been reported in the international literature but despite a thorough search there appears to be no similar case of extraperitoneal rupture.¹⁻²⁶

CASE REPORT

A 70 year-old lady presented at the emergency department of our hospital, complaining of the sudden onset intense lower abdominal pain of 3 hours duration. She had had no defecation for at least 7 days, presumably due to poor feeding and environmental changes.

Past Medical History: Moderate hypertension adequately controlled with b-blockers, constipation.

Physical Examination: A conscious, well-nourished patient, with obvious signs of mild to moderate dehydration. Her blood pressure was 145/90 mmHg, the pulse rate 82/min (sinus rhythm) and the temperature 37,2°C. Her abdomen was soft and palpable, with intense tenderness on deep pressure over the suprapubic area and right and left iliac fossae but no signs of peritoneal irritation. Bowel sounds were normal. The bimanual (rectal – vaginal) examination revealed adequate sphincteric function with soft stools in the rectal ampulla. On palpation of the posterior wall of the rectum a suspicious ‘step’ in its continuity was felt digitally. No rectal or uteral prolapse was detected. Laboratory screening was normal and the leukocyte count was just 7800mm³. Chest and abdominal plain x-rays were normal, so was the ECG, considering her age. The case was interesting and therefore the patient was admitted to our Department for further evaluation and treatment.

One hour following admission she had a voluminous normal defecation, but two hours later, after she was adequately hydrated she had a second motion, which was hemorrhagic in nature. On regular follow-up examinations there were no major changes in the clinical findings, apart from the development of mild peritoneal irritation in the lower abdomen. A few hours later, we noticed, gradual deterioration of her general condition with the heart rate rising to 115/min and the temperature to 38,2°C. An urgent endoscopy was carried out without air insufflation, suggestive of rectal rupture (Figure 1). An urgent laparotomy with midline incision was performed. Although a thorough and meticulous search was carried out, no pathology was discovered apart from small quantity of reactive fluid in the pouch of Douglas, which was aspirated and sent for culture.

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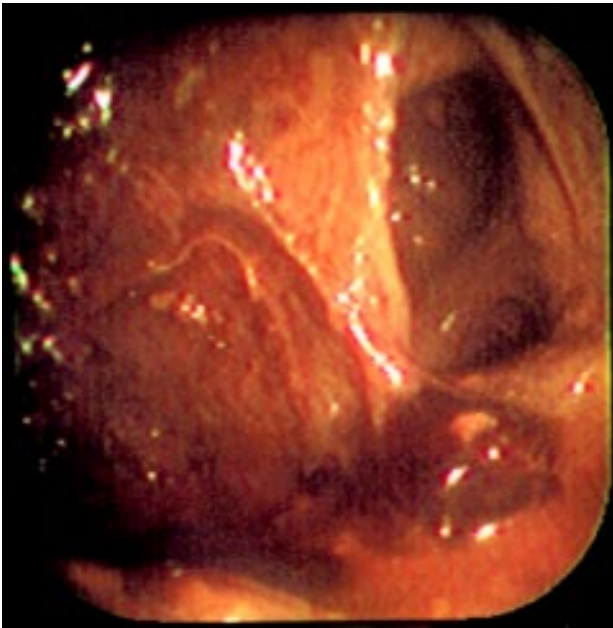


Figure 1.

Considering the clinical and endoscopical findings, the peritoneal reflexion of the rectum was opened and following careful mobilization of the bowel a linear extraperitoneal rupture – 4 cm long – was detected in the posterior wall of the rectum, with simultaneous exit of soft stools at the presacral area and intense soiling of the region. Despite thorough examination, no diverticulum, malignant disease, fecaliths, foreign body, inflammatory, microbial or parasitic infection was found. By refreshing the patient's history no report of trauma, defecation strain, vomiting or weight lifting was given additionally. No signs of inflammation or hematoma at the bowel wall were detected. Hartmann's procedure was carried out (excision of the ruptured rectum) due to the low location of the rupture and the presence of stools (sepsis) in the pelvis. The patient had a fine and uneventful recovery from the operation and was discharged 8 days later.

The pathology report revealed, haemorrhagic necrosis of the mucosa and the rectal wall with concommitant "rupture" and expansion of the necrotic and inflammatory process to the pericolic fat. It was impossible to determine a clear etiology for the event.

3 months later she was readmitted for restoration of the continuity of her large bowel which was carried out through the same incision and end-to-end colo-colic anastomosis using cyclic stapler - CDH 33mm. Her postoperative period was again uneventful. Two years later the

patient remains asymptomatic and healthy, while a recent full length colonoscopy revealed no pathology.

It is worth noting that the patient now opens her bowels on a daily basis without periods of constipation presumably due to elimination of the sigmoid "brake" effect.

DISCUSSION

Although "rupture" and "perforation" of the rectum are frequently confused entities they should be considered different affections. Perforations of the rectum or rectosigmoid are usually located in an area of previous acute ulceration of the intestinal wall. This ulceration could be caused by fecaliths, diverticulosis, non-specific colitis, solitary rectal ulcer or malignancy. Systematic histological examination should confirm the etiology.¹⁻⁵

Rupture of the rectum or rectosigmoid is usually caused by a specific type of trauma – sudden increase of intraabdominal pressure due to 1) blind trauma, 2) heavy weight lifting or 3) extreme straining in chronically constipated patients, frequently combined with rectal prolapse.^{6,7}

The term "spontaneous rupture" refers to those cases in which no etiology could be detected – discovered.

Various theories have been proposed, in an effort to explain the mechanism of spontaneous rectal rupture. Among them the most prevailing are: 1) Intramural hematoma formation resulting in dissection and weakening of the rectal wall, 2) Congenital anal dysplasia coexisting with a weakened area of the rectal wall and 3) Progressive deepening of the pouch of Douglas in combination with sudden increase of intraabdominal pressure could cause "rupture" of the rectum.^{2,8-16}

The sudden rise of intraabdominal pressure,^{6,17-22} seems to be the main contributing factor of intestinal rupture. The rupture takes place in a constipated patient not only due to disturbed mechanical circumstances at defecation, but also because the changed defecation pattern per se has caused a preliminary lesion of the intestinal wall which has become friable secondary to chronic inflammation of its layers.

The danger of rectal or rectosigmoid rupture rises when rectal or even uteral prolapse coexists.²³⁻²⁵ The intestinal rupture seems to be a mechanical complication of a perineal hernia in conjunction with a coexisting prolapse.

The sudden rise of intraabdominal pressure, during

an extreme effort to defecate, force the small bowel loops to occupy the pouch of Douglas and therefore violently push the anterior wall of rectal ampulla or rectosigmoid junction. The latter, which now lacks support, can sustain rupture, whether the prolapse is exteriorized or not.

Where there is no rectal prolapse, the intestinal rupture in the constipated patient could be provoked by the loss of coordination between the elevator muscles of the anus and rectum itself (anal dyssynergia or anismus). In this way the expected disappearance of ano-rectal angle during defecation, is inhibited. The abdominal straining – push in an effort to defecate is no longer exerted along the ano-rectal axis but instead to the anterior rectal wall with possible sequelae the rupture of the rectum.

The surgical management of spontaneous rupture of the rectum follows the “rules” of large bowel trauma surgery. If the rupture is small, it can be sawed – the edge of the ruptured wall should always be sent for histological examination – with or without construction, of proximal colostomy. The timing of the operation plays a considerable role in the surgeon’s choice.⁵ If the rupture is large and the surroundings contaminated with fecal material - as in our case – we suggest Hartmann’s procedure and restoration of intestinal continuity within 3 to 4 months. If case a large deepening of the pouch of Douglas is found, obliteration of the space at the same time, is suggested.²⁶

Although many surgeons suggest the avoidance of colostomy in cases which are operated on soon after rectal rupture, we think that temporary proximal colostomy should be considered, as is the practice in most of the cases of left lower colon trauma.

In conclusion, we suggest that it is quite important to discriminate between spontaneous “ruptures” and “perforations” of the rectum and rectosigmoid junction in order to eliminate the confusion that exists in the international literature as regards the correct use of these terms that definitely represent different entities. “Ruptures” of the rectum or the rectosigmoid junction are lesions due to effort in chronically constipated subjects, frequently having rectal prolapse. Perforations of the rectum, rectosigmoid junction or the sigmoid loop arise from a previous acute ulceration of the intestinal wall.

Finally, careful and systematic histological examination should allow the exclusion of certain diseases with established etiology and pathophysiology, before the surgical findings are attributed to a “disease” – entity whose only manifestation seems to be the “rupture”.

REFERENCES

- Behan PO. Idiopathic bowel rupture. *Br J Clin Pract* 1966; 20:426-429.
- Schein M, Decker GAG. Spontaneous perforation of the rectum. *SAMJ* 1986; 69:388-389.
- Laborde Y, Champetier J, Latoublon C. Les ruptures et les perforations “spontaneous” du rectum ou du sigmoïde. *J Chir (Paris)* 1980; 117,8-9:463-447.
- Dickinson PH, Gilmour J. Spontaneous rupture of the distal large bowel. *Br J Surg* 1961; 49:157-162.
- Golinger JC. *Surgery of the anus, rectum and colon*. 4th ed. London: Baliere Tindall 1980: 924-925.
- Min Kari T, Turan C. Rectosigmoid rupture of the distal colon caused by effort during defecation and acute evisceration of several loops of of the small intestine through the anus. *Ann Surg* 1961; 154:967-971.
- Qurcshi MI. Rectal tear causing prolapsed ileum after closed abdominal injury. *Injury* 1977; 9:168-169.
- Eisen J. Spontaneous ileal evisceration through the anus to rectosigmoid rupture. *Am J Surg* 1970; 119:758.
- Kirkham CS. Spontaneous perforation of the normal pelvic colon. *Br J Surg* 1960; 48:126-128.
- Kessing SV. Spontaneous perforation of the normal sigmoid colon. *Acta Chir Scand* 1962; 123:14-15.
- Mc Lanahan S, Johnson ML. Spontaneous rupture of the lower colon with evisceration of small intestine through the anal orifice. *Surgery* 1945; 18:478-482.
- Czerniak A, Avigad I, Vermesh M. Spontaneous rupture of the rectosigmoid with small bowel evisceration through the anus. *Dis Col & Rect* 1983; 26:821-822.
- Duffield GD, Van Buren G. Spontaneous rupture of the rectum with evisceration of loops of the ileum through the anus. *Am J Surg* 1965; 31:193-195.
- Wroblewski DE, Dailey TH. Spontaneous rupture of the distal colon with evisceration of the small intestine through the anal canal. *Dis Col Rect* 1979; 22:569-572.
- Tomaioli M. Acute rectal herniation of the omentum. *J Int Coll Surgeons* 1957; 30:107-109.
- Terkonda SP, Nichols FC, Sarr MG. Spontaneous perforating hematoma of the rectum. Report of a case. *Dis Colon Rectum* 1992; 35:270-272.
- Alvich JP, Lepow HL. Spontaneous rupture of sigmoid with ileal evisceration through the anus: A complication of advanced rectal prolapse. *J Int Coll Surgeons* 1964; 41:527-534.
- Tokuanga Y, Hata K, Nishitai R, Kaganoi J, Nanbu H, Ohsumi K. Spontaneous perforation of the rectum with possible stercoral etiology: report of a case and review of the literature. *Surg Today* 1998; 28:937-939.
- Ellul JP, Mannion S, Houry GA. Spontaneous rupture of the rectosigmoid colon with evisceration of the small bowel through the anus. *Eur J Surg* 1995; 161:925-927.
- Drevet D, Blineau N, Champion M, Joffre P, Faysse E. Spontaneous rupture of the rectum. Contribution of CT scan. Apropos of a case. *Ann Radiol (Paris)* 1994; 37:278-280.
- Arora PK, Relan M, Senthna KS. Spontaneous rupture

- of the rectum and colon. *J R Coll Surg Edinb.* 1989; 34:285.
22. Demirag A, Nurlu H, Gurer A, Turkyilmaz Z, Oguz M. Spontaneous perforation of rectum and rectosigmoid junction. Case report. *Mater Med Pol.* 1993; 25:47-48.
 23. Hall JH, Bradfield JD. Prolapse of the ileum through the rectum and anal canal. *Br J Surg* 1972; 59:149-151.
 24. Jeong J, et al. Rupture of the rectosigmoid colon with evisceration of the small bowel through the anus. *Yonsei Med J* 2000; 41:289-292.
 25. De Vogel PL, Kamstra PE. Rupture of the rectum with evisceration of the small bowel through the anus: a complication of advanced rectal prolapse. Case report. *Eur J Surg* 1994; 160:187-188.
 26. Neely WA. Prolapse of small intestine through anus due to rent in sigmoid. *Surg Gynecol Obstet* 1963; 117:529.