Trauma to an inguinal hernia resulting in bowel rupture: A case report and literature review

Daquan Liu a,∗, Lun Zhu b, Mingkao Wang a

a Department of General Surgery, The Affiliated Huaian Hospital of Xuzhou Medical University and The Second People’s Hospital of Huaian, Huaian, PR China
b Department of Pathology, The Affiliated Huaian Hospital of Xuzhou Medical University and The Second People’s Hospital of Huaian, Huaian, PR China

Abstract

INTRODUCTION: We report on a rare case of a man with bowel rupture due to direct trauma to his diagnosed inguinal hernia, with reviewing the relevant literature, we have found some characteristics of our case different from the similar cases reported by other authors.

PRESENTATION OF THE CASE: A 54-year-old man, with a diagnosted right inguinal hernia without treatment for over six months, presented to our hospital with generalized peritonitis and possible sepsis, caused by minimal hit directly to his hernia. The patient underwent an immediate exploratory celiotomy with segmental intestine resection and anastomosis, without hernia repair at the same time because of the concomitant peritonitis. The patient recovered uneventfully and postoperative histology showed chronic inflammation of the perforated bowel. Later, he patient had his hernia repaired by elective operation.

DISCUSSION: Different from other cases of the same kind, our patient only suffered a trivial blunt trauma, so we believe that the longlasting inflammation of the intestine is one of the major reasons for such a bowel perforation, which differs from the opinion that external force is the crucial factor. Besides, after the first non-herniorrhaphy procedure, our patient kept no recurrent hernia for about 10 months until it’s recurrence and had the herniorrhaphy.

CONCLUSION: Trauma directly to a known inguinal hernia is an uncommon, but a dangerous event, and the abnormal alterations of intestine in the hernial sac may be one of the major reasons for such event, so it is mandatory for the physician to explain the complication of the hernia to the patient, for the hernia being repaired as early as possible.

© 2017 Published by Elsevier Ltd. on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

There are more than 20 million hernias to be repaired annually around the world, the vast majority of hernias are repaired electively to prevent complications, such as strangulation and incarceration [1]. However, a diagnosted inguinal hernia directly injured by blunt trauma, like ours, is a very rare case, and tends to result in serious outcomes, such as bowel rupture, peritonitis, and so on. The majority of the authors mainly attributed this to the injury suffered by the patient, however, in our opinion, the pathological alterations of bowel in a longstanding hernial sac may be one of the dominant factors.

This case has been reported in line with the SCARE criteria [2].

2. Case report

A 54-year-old man, with a diagnosted right inguinal hernia without being treated for over six months, presented to our hospital with 16 h history of lower intermittent abdominal pain secondary to a fall while riding a motocycle, when the handlebar lightly hit his hernia. Even though physical examination found only a tender partially reducible right inguinal hernia and the ultrasound showed a right inguinal hernia, free abdominal fluid (Fig 1) which could not specify the cause, a diagnosis of a right incarcerated hernial hernia with a likely ruptured viscus could be made, and there was an indication for the patient to be hospitalized for treatment. However, the patient and his family refused hospitalization and went home. But the patient returned 8 h later with intense abdominal pain, re-examination discovered the signs of spreading peritonitis (diffusely worsening abdominal pain, rebound, and tenderness) and the hernia spontaneously reduced. His temperature was 38.5 °C, and the leukocyte count was 15.6 × 109/L with 91.2% of neutrophils. Because of his generalized peritonitis and possible sepsis, the patient underwent an immediate exploratory celiotomy.

* Corresponding author.
E-mail address: jida2008@sina.com (D. Liu).

https://doi.org/10.1016/j.ijscr.2017.11.039
2210-2612© 2017 Published by Elsevier Ltd. on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Upon opening the abdominal cavity, there was a large amount of purulent peritoneal fluid mixed with some feculent material, after the fluid was cleared out, a 2.0 cm rupture of the ileum 15 cm from the ileocecal junction was found, a bowel segmental resection and an end-to-end anastomosis were performed with the hernia not being repaired in the same setting due to the heavily contaminated peritoneal cavity. After surgery, the patient made a smoothly recovery and was discharged after 30 days in hospital, and post-operative histology showed chronic inflammation of the excised intestinal segment (Fig 2). We followed up the patient by telephone and physical examination in out-patient department, and found that here was no recurrent hernia until it’s recurrence in the 10th month after the first operation, and the patient underwent a delayed hernia repair.

3. Discussion

A diagnosed inguinal hernia directly injured by blunt trauma, is a very rare case, we used the key words “trauma to inguinal hernia” and “inguinal hernia trauma” to search PubMed, and only found 8 such instances reported [3-10]. Despite it’s rarity, this unusual event tends to result in serious outcomes; all the cases developed perforations of bowels, peritoneal contamination or peritonitis.

As for the mechanisms of the bowel rupture, Shahin and other authors ascribe it to the force applied to or produced in the abdomen cavity [3,4,6-8], however, our patient was only subjected to a minor external force, in our opinion, the pathological changes of chronic inflammation of the involved intestine and edema, weakening of the bowel deriving from the hernia incarceration [1], make the intestinal wall fragile to injury and may be the fundamental reasons for the result, that is why even a non-traumatic episode can cause the disruption of the bowel in the hernia sac [9].

Depending on the history of injury to an inguinal hernia and clinical manifestations, especially, presence of peritonitis, and combining with ultrasonic scan or radiography, it is easy to diagnose such a bowel rupture caused by hernia trauma. However, the event may occur while the patient is not aware of the hernia, until the patient is admitted to hospital with the groin hernia discovered by CT [11]. Furthermore, when blunt trauma acting on abdomen, the presence of inguinal hernia is a major factor contributing to the intestinal perforation, regardless of whether the force be direct or indirect by muscular contraction, and whether it be applied to the inguinal area or at a distance from it [11], in such a circumstance it is the physician’s responsibility to examine the patient carefully, and not to leave out an unknown inguinal hernia.
The treatment of inguinal hernia trauma with bowel perforation is more complicated than that of a simple inguinal hernia, the first procedure is to eliminate the perforation in order to cure the peritonitis or sepsis, followed by repair the hernia. Most of the cases we know had the perforation repaired by simple closure [3–5,7,8,11] with the rest by intestinal resection and anastomosis, and half of them underwent delayed herniorrhaphy [4,6–8,11], our patient experienced intestinal anastomosis and delayed hernia repair due to the grave peritonitis and the threat of postoperative infections.

Another strange manifestation of our case is that, after the non-herniorrhaphy, namely bowel excision and anastomosis, there was a ‘temporary cured state’, that is the patient continued to be free of hernia for ten months until it reappeared. We think that this may be due to the resection of the perforated intestinal segment in the hernia, or the hernia content, whereas not repairing the abdominal wall defect that is a key factor promoting the formation of a hernia. So it is crucial to herniorrhaphy to correct the abdominal defect.

4. Conclusion

Trauma directly to an inguinal hernia is an uncommon but dangerous situation, and the abnormal alterations of intestine in the hernial sac may be one of the major reasons for such situation, so it is mandatory for the physician to explain this unusual complication of the hernia to the patient, so that the hernia is repaired as early as possible.

Conflicts of interest

The authors declare no potential financial conflict of interest related to this manuscript.

Funding

None.

Ethical approval

The manuscript “Trauma to an inguinal hernia resulting in bowel rupture: a case report and literature review” is a case report written by our surgeons, Daquan Liu, etc., and this article does not contain any identifiable information about the patient, so we exempted it’s ethical approval.

The Ethics Committee of The Second People’s Hospital of Huai’an, Huai’an, P.R. China.

Consent

I state that I had the patient consent for the publication of my case report.

Author contribution

Study Conception and Design: Daquan Liu.
Acquisition of Data: Lun Zhu, Mingkao Wang.
Analysis and interpretation of data: Lun Zhu, Mingkao Wang.
Writing of Manuscript: Daquan Liu.

Guarantor

Guarantor is Daquan Liu.

References

[1] H. Hakiman, J. Deliberto, T. Pham, S. Dineen, S. Huerta, Coughing-induced bowel transaction in a patient with an incarcerated inguinal hernia: a case report, J. Med. Case Rep. 7 (1) (2013) 47.
[2] R.A. Agha, A.J. Fowler, A. Saeta, I. Barai, S. Rajmohan, D.P. Orgill, SCARE Group, The SCARE statement: consensus-based surgical case report guidelines, Int. J. Surg. 34 (2016) 180–186.
[3] Y. Shahin, G. Sahota, A. Hotouras, A. Agarwal, G. Tierney, Small bowel perforation due to blunt trauma to an inguinal hernia: a case report and literature review, Hernia 16 (3) (2012) 349–350.
[4] B.A. Westwood, P.B. Milsom, Colonic perforation following blunt trauma to an inguinal hernia, Hernia 15 (6) (2011) 699–700.
[5] F. Ersöz, S. Arıkan, O. Ozcan, E. Sentatar, Isolated terminal ileum perforation after a kick blow to an inguinal hernia, Hernia 13 (5) (2009) 565–567.
[6] R.N. Uppot, V.K. Gheyi, R. Gupta, S.W. Gould, Intestinal perforation from blunt trauma to an inguinal hernia, AJR Am. J. Roentgenol. 174 (6) (2000) 1538.
[7] D. Gianom, A. Fenner, Perforation of small intestine in patients with small hernia: (in German with English abstract), Chirurg 66 (4) (1995) 637–639.
[8] R.D. Reynolds, Intestinal perforation from trauma to an inguinal hernia, Arch. Fam. Med. 4 (11) (1995) 972–974.
[9] M.J. Tornilla Jr., Ruptured ileum with peritonitis following blunt trauma to inguinal hernia (a report of two cases and review of the literature), W. V. Med. J. 66 (1) (1970) 6–8.
[10] A. Rollino, Ileal perforation caused by closed injury at the site of an inguinal hernia, Minerva Gastroenterol. 8 (1962) 97–99.
[11] C.N. Andrei, B.I. Diaconescu, B.V. Martian, M. Beuran, Isolated ileal perforation following veal attack in a patient with an undiagnosed inguinal hernia: case report and review of the literature, Chirurgia (Bucur.) 111 (3) (2016) 266–269.