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Duodenal rupture due to giant inguinal hernia: A case report



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ABSTRACT

INTRODUCTION: Giant inguinal hernia is unusual, and duodenal rupture accompanying it is particularly very rare and significantly hard to manage surgically.

PRESENTATION OF CASE: An 81-year-old man was admitted to our institution with upper abdominal pain. He had tenderness of the upper mid abdomen and a bilateral large inguinal hernia but he did not have pain in the inguinal–scrotal area. Computed tomography (CT) showed slight dilatation of the small bowel and stomach. There were no remarkable signs of incarceration of the inguinal hernia. Therefore, he was admitted to the internal ward. On the second day in hospital, he suddenly went into shock. CT revealed that there was free air and ascites in the inguinal hernia and therefore an emergency operation was performed.

The transverse colon, ascending colon, and ileum were incarcerated, and perforation of the cecum was found. We also detected duodenal rupture at the inferior duodenal angle. We resected the terminal ileal (almost 90 cm) and ileocecal area, followed by side-to-side anastomosis of duodenum and jejunum. We only repaired the peritoneum at the internal hernia ring. After the operation, despite intensive-care therapy, this patient passed away on the 18th postoperative day.

DISCUSSION: The mesocolon and third portion of the duodenum were strongly pulled down into giant inguinal hernia, probably causing the rupture of the inferior duodenal angle.

CONCLUSION: Giant inguinal hernia possibly provokes duodenal rupture and therefore should definitively be repaired if feasible.

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1. Introduction

Inguinal hernia is a common disease in clinical surgical practice; however, giant inguinal hernia, defined as a hernia that extends below the midpoint of the thigh while standing [1], is unusual and rarely encountered in modern clinical practice. It affects a person's quality of life because it can cause difficulties in walking and sitting [2].

In the majority of inguinal hernia cases, it tends to contain preperitoneal fat or omentum, though giant inguinal hernia occasionally contains much intraabdominal viscera [3]. Therefore, it presents significant difficulties for surgical management.

Upper intestinal perforation secondary to giant inguinal hernia is relatively rare, and particularly, duodenal rupture is very rare.

The work in this case has been reported in line with the SCARE criteria [4].

2. Presentation of case

An 81-year-old male with a longstanding inguinoscrotal hernia was admitted to our internal medical department for upper abdominal pain. He had a past medical history of auricular fibrillation, chronic heart failure, and chronic renal dysfunction; he had a temperature of 36.1 °C. Abdominal examination revealed distention and tenderness of the epigastric area and a bilateral giant inguinoscrotal hernia below the midpoint of the inner thigh (right side; 25 cm, left side 20 cm). They were not tender or red. On laboratory examination, his white blood cell count was 4900/mm³, C-reactive protein was 1.2 mg/dl, creatinin was 1.71 mg/dl, prothrombin (PT) sec was 18.7 s, and PT-INR was 1.61.

Computed tomography (CT) revealed a slightly dilated stomach and jejunum, and a large bilateral inguinoscrotal hernia containing small bowel, cecum, ascending colon, and sigmoid colon. There was no remarkable occlusion point (Fig. 1).

Two days after admission, this patient had acute entire abdominal pain, and his blood pressure decreased to the eighties. A CT scan revealed free air in the right inguinal hernia sac and much ascites (Fig. 2). Therefore, the specialist in internal medicine consulted us and an emergency operation was performed with a diagnosis of

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Fig. 1. An abdominal computed tomography scan. This figure show slightly dilated stomach and jejunum, and large bilateral inguinoscrotal hernia containing small bowel, cecum, ascending colon, and sigmoid colon.



Fig. 2. Two days aftershow.

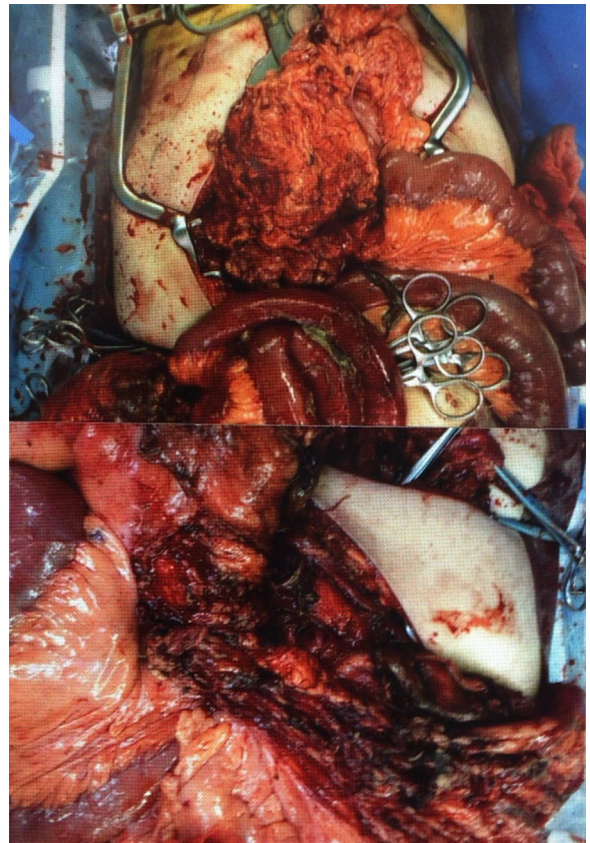


Fig. 3. There was perforation of cecum. Terminal ileum of about 100 cm from bauhin valve had become necrotic.

acute generalized peritonitis following small bowel perforation in the inguinal hernia sac.

Under general anesthesia, a mid-lower median abdominal incision and a transverse incision at the right inguinal area were made. There were dirty ascites in the inguinal sac, and the cecum was perforated. The terminal ileum had become necrotic over about 100 cm behind Bauhin’s valve (Fig. 3). After lateral extension of the internal hernia ring and mobilization of the pancreas head, duodenum, and right side of the colon for right hemicolectomy, a substantial amount of bile was found, and we detected rupture of the inferior duodenum angle. Therefore we performed right hemicolectomy and side-to-side anastomosis of duodenum and jejunum. Only primary closure of the peritoneum at the hernia gate was performed. The patient was transferred to intensive care unit.

After the operation, patient’s general condition was very severe due to septic shock persisting for a long time following leakage of the duodenum–jejunum anastomosis. We used several antibiotic agents, a vasopressure agent, and continuous hemodiafiltration; despite these attempts, the patient regrettably passed away on postoperative day 18 (Fig. 4).

3. Discussion

Inguinal hernias are a common disease, and the patients may present to the surgical department for incarceration. Giant hernia is defined as a hernia that extends below the midpoint of the thigh while standing [1]. A number of intraabdominal organs have been reported in giant inguinal hernias including the appendix, bladder, small and large bowel, stomach, and ovaries [3]. There are some reported cases of gastric, small bowel, or colon perforation due to inguinal hernia [3,5–9]. However, duodenal rupture due to inguinal hernia is rarely reported. In the past, two cases of duode-

patient's general condition was very severe due to septic shock. We used several antibiotic agents, vasopressure agent and continuous hemodiafiltration

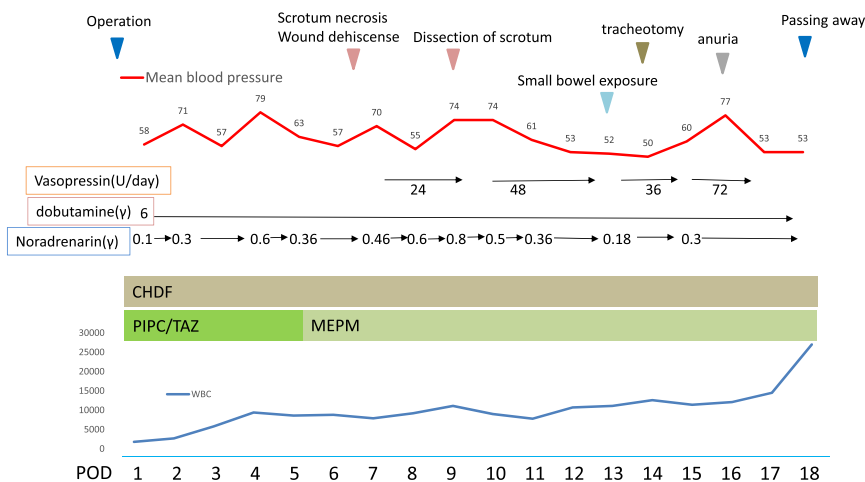


Fig. 4. Patient's general condition was very severe due to septic shock. We used several antibiotic agents, vasopressure agent and continuous hemodiafiltration.



Fig. 5. CT scan showed superior mesentery artery and duodenum retracted to lower abdomen.

num perforation with giant inguinal hernia have been described [10,11]. In this case, the etiologic reasons for duodenal perforation seemed to be that the third duodenal portion was retracted downward because so much content in the giant inguinal hernia sac exerted much pressure on the inferior duodenal angle, which therefore ruptured. Retrospectively, a CT scan showed that the superior mesenteric artery and duodenum were retracted to the lower abdomen (Fig. 5). It seemed that the edema and dilatation of the intestines worsened and more intestines were pushed out

into the hernial sac during the two days after admission for the emergency, leading to the duodenum rupture.

A major problem concerning the surgical management of giant inguinal hernia is the occurrence of postoperative complications. They are caused by an acute increase in intraabdominal pressure after placing much of the hernia content back into the abdomen, which can also develop due to ileus of the bowels in a later postoperative period [12–15]. An increase of the intraabdominal pressure affects regional blood flow in the abdomen and cardiovascular and respiratory systems. It decreases venous return, cardiac output, blood pressure, tidal volume, and pulmonary compliance [16].

In this case, we resected almost 100 cm of ileum and right hemi-colon and therefore the volume of contents to be placed back in the abdomen was remarkably reduced, but we should not have closed the peritoneum at the hernia gate even only primarily because this may have provoked the increase of intraabdominal pressure.

4. Conclusion

A wait and see approach is often adopted for giant inguinal hernia because of patient's clinical or social background and the difficulty of surgical repair. However, this possibly sets the stage for duodenal rupture following a severe clinical course, and therefore we emphasize on the importance of taking an aggressive approach, repairing it surgically as soon as possible, even if it is reducible and has not caused any symptoms.

Conflicts of interest

The authors declare that they have no competing interests.

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Ethical approval

This paper is not a research study, so we assume we do not need ethical approval.

Consent

Written informed consent was obtained from the patients or relatives for publication of this case report and any accompanying images.

Author contribution

KI performed the surgery, wrote the paper, made the literature review, and drafted the manuscript. HS, NY, MS, AS, HM advised on the management of this patient as expert surgeons. KN assisted in the surgery.

Guarantor

The manuscript has been read and approved by all of the authors and is not under consideration for publication elsewhere.

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