

Application of laparoscopic distal pancreatectomy for normal anatomy after hiatal hernia repair: A case report

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Abstract

We describe a case of pancreatic tumor associated with a giant type IV hiatal hernia that had prolapsed into the posterior mediastinum. We initially performed hiatal hernia repair, followed by laparoscopic distal pancreatectomy, because the hernia repair enables performing pancreatectomy safely and in the normal anatomical position.

Case report

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Data Availability Statement

All data collected during this study are available from the corresponding author.

Statement of Ethics

This case study was approved by the Biomedical Ethics Committee.

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. This study was approved by the Ethics Committee of National Hospital Organization Nagasaki Medical Center.

Conflict of interest statement

The authors have no conflict of interest to declare.

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Abstract

We describe a case of pancreatic tumor associated with a giant type IV hiatal hernia that had prolapsed into the posterior mediastinum. We initially performed hiatal hernia repair, followed by laparoscopic distal pancreatectomy, because the hernia repair enables performing pancreatectomy safely and in the normal anatomical position.

Keywords: hiatal hernia, pancreatic tumor, distal pancreatectomy

Introduction

Acquired hiatal hernia is classified according to the location of the gastroesophageal junction and the extent of the hernia. In type I or sliding hernia which are the most common hernias, only the gastroesophageal junction is herniated into the posterior mediastinum. In the type II hernias, the gastric fundus is herniated into the mediastinum adjacent to the esophagus, even though the gastroesophageal junction is in the correct position. In type III (mixed) hiatal hernia, more than 30% of the stomach is herniated with the gastroesophageal junction [1]. In type IV giant hernias (0.3%) and congenital hernias (0.2%), organs other than the stomach are herniated. The most frequently herniated organs include the colon, small intestine, omentum and spleen [2] [3]. Intra-abdominal organs, such as the transverse colon, can herniate along with the stomach; however, herniation of the pancreas is very rare.

In simultaneous hiatal hernia repair and distal pancreatectomy, understanding the anatomical features is difficult because of the displacement of the pancreas. Moreover, thus far, no studies have reported cases of neoplastic lesions in a prolapsed pancreas.

We present the case of an elderly patient with a pancreatic tumor associated with a giant type IV hernia that had prolapsed into the posterior mediastinum and required resection. We also present a literature review on surgical treatment of this rare disease.

Case presentation

An 85-year-old man with dysphagia was admitted to our hospital. Computed tomography (CT) revealed prolapse of a massive hiatal hernia involving the stomach (Fig.1a) and pancreatic body (Fig.1b). His CT findings also showed an 8-mm enhanced solid component in the cyst, which was found in the pancreas body (Fig.1c). We suspected that an intraductal papillary mucinous neoplasm was the most likely diagnosis, and surgery was indicated. We performed hiatal hernia repair, followed by laparoscopic distal pancreatectomy. Ports were placed in the umbilical region, bilateral hypochondria, and bilateral upper abdomen. A large hiatal hernia was also observed. A large part of the stomach had prolapsed into the mediastinum (Fig2a). The adhesion between the hernia sac and the omentum was peeled off. The hernia orifice was sutured with a non-absorbable thread while pulling the esophagogastric junction (Fig2b). Fundoplication was performed from the front, and hiatal hernia repair was completed. Distal pancreatectomy was then performed using five ports. The pancreas then returned to its normal position. Tunneling of the pancreatic parenchyma was performed immediately above the portal vein. The pancreatic parenchyma was dissected using a laparoscopic linear stapler (Fig2c). Splenic arteries and veins were dissected. The pancreatic tail and spleen were detached from the retroperitoneum, and the specimen was removed. In this case, gastric stasis occurred but improved conservatively. Esophageal reflux was not observed, and the patient was transferred to another hospital on postoperative day 13.

Discussion

Hiatal hernia may be transient or permanent and cause the stomach to pass through the diaphragm and enter the chest. Surgical intervention, including hernia reduction, closure of the esophageal hiatus, and anti-reflux procedure, may be necessary for types II, III, and IV hernias with severe esophagitis. It may also involve other abdominal organs, as observed in the present case. The most common organs associated with the stomach are the colon, small intestine and omentum. A giant hiatal hernia has been reported

frequently; however, cases of giant hernia with pancreatic prolapse is extremely rare [4]. Stretching of the transverse mesocolon has been reported to increase the mobility of the pancreas owing to greater relaxation of the posterior adherent fascia. A recent study of a human cadaver reported a posterior pancreatic fascia covering the posterior surface of the main body of pancreas but was unable to locate the anterior renal fascia, possibly because of age-related degeneration of the adrenal glands [5]. In the elderly, the pancreas may be more mobile owing to connective tissue degeneration, making it more likely to migrate from a hiatal hernia. Pancreatic hernias are asymptomatic [6] [7], and most cases are discovered incidentally during CT scans performed to evaluate features characteristic of giant esophageal hernias, such as abdominal pain [8] [9], vomiting [10] [11], dysphagia [3], and dyspnea [12]. In this case, the patient complained of dysphagia and was found to have a giant hiatal hernia with pancreatic prolapse. However, there are no reports of neoplastic lesions in the prolapsed pancreas. In this case, the pancreas with a tumor requiring resection had prolapsed into the posterior mediastinum due to a giant hiatal hernia. We performed hiatal hernia surgery before pancreatic resection to ensure that a safe pancreatic resection is conducted. Preceding hiatal hernia repair allows pancreatic resection to be performed in the normal anatomical position, thereby increasing safety of the procedure. One study reported a case of pancreatitis and bile duct dilatation secondary to a giant hiatal hernia of the pancreatic tail [13]. Therefore, pancreatic resection without esophageal hiatal hernia repair in the present case may pose a risk of inflammation extending into the mediastinum when complications, such as pancreatic fistula, develop.

Conclusion

In our case, we describe a patient with a pancreatic tumor associated with a giant hiatal hernia that had prolapsed into the posterior mediastinum. The patient was safely managed by undergoing hiatal hernia repair, followed by laparoscopic distal pancreatectomy. In simultaneous hiatal hernia repair and distal pancreatectomy, understanding the anatomy is difficult because of the displacement of the pancreas. Therefore, hiatal hernia repair should be performed first because it enables laparoscopic distal pancreatectomy to be performed in the normal anatomical position.

Author Contributions

Akira Yoneda: manuscript writing, and literature review.

Shunsuke Murakami: manuscript writing and literature review.

Hanako Tetsuo : manuscript writing and literature review.

Saeko Fukui: manuscript writing and literature review.

Takayuki Miyoshi: manuscript writing and literature review.

Tatsuya Okamoto: manuscript writing and literature review.

Amane Kitasato: manuscript writing and literature review.

Hiroaki Takeshita: manuscript writing and literature review.

Tamotsu Kuroki: Manuscript writing and literature review.

All authors have read and approved the final manuscript.

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Figure legends

Figure 1: Computed tomography images showing (a) prolapse of the stomach, (b) prolapse of the pancreatic body, and (c) an 8-mm solid component in the pancreatic body

Figure 2: Laparoscopic images showing (a) a huge hiatal hernia, wherein a large part of the stomach had prolapsed into the mediastinum, (b) suturing of the hernia orifice with a non-absorbable thread, and (c) distal pancreatectomy in the normal position.

Figure 1

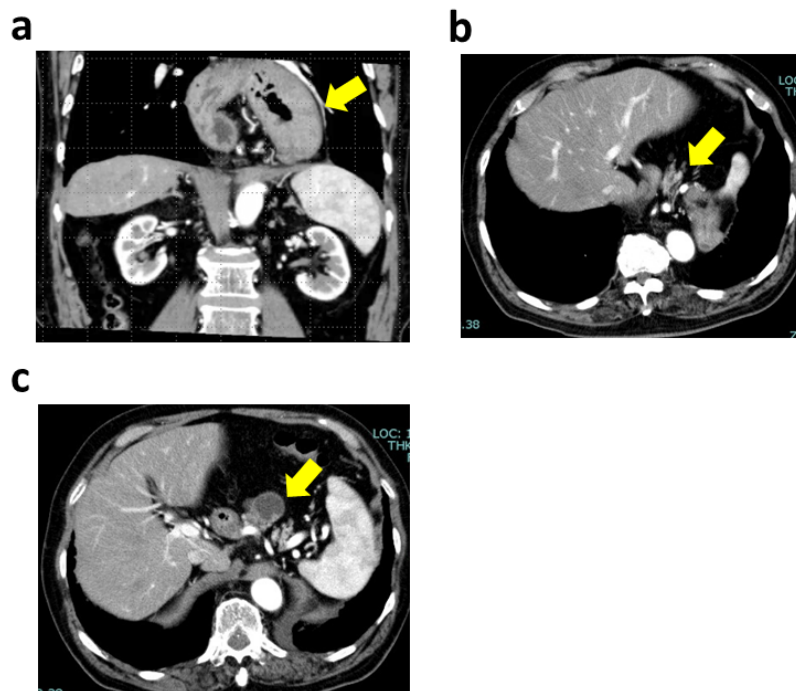


Figure 2

