

Case Report

Intrathoracic Stomach Treated with Toupet Fundoplication after Emergency Surgery for Gastric Perforation : A Case Report

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ABSTRACT

A 68-year-old man was referred to our department owing to intrathoracic stomach in December 2012. His chief complaints were regurgitation and dysphagia of 2 years' duration. Elective surgery was scheduled for February 2013. Before elective surgery could be performed, the gastric corpus became perforated, and emergent surgery was performed at another hospital in December 2012 ; the surgery involved simple closure of the perforation site, omental implantation, and peritoneal drainage. The postoperative course was uneventful, and the patient was transferred to our department on postoperative day 20. Seven days later, laparoscopic Toupet fundoplication was performed as a radical operation for intrathoracic stomach but required conversion to open surgery because of severe adhesions around the esophageal hiatus. The duration of surgery was 301 minutes, and the blood loss was 560 ml. The postoperative course was uneventful, and the patient was discharged on postoperative day 9. As of 7 months after surgery, he reports no regurgitation or dysphagia and shows no evidence of recurrence.

(Jikeikai Med J 2013 ; 60 : 77-80)

Key words : intrathoracic stomach, upside-down stomach, paraesophageal hiatal hernia, hiatal hernia, gastric perforation

INTRODUCTION

Paraesophageal hiatal hernias (PEHs) account for less than 5% of all hiatal hernias but are highly likely to develop complications if left untreated¹. PEH tend to enlarge with time, and, as such, a well-defined sac of peritoneum develops². A PEH is considered giant when more than one-third of stomach is in the thoracic cavity. When more than 75% of the stomach has herniated above the diaphragm, intrathoracic stomach (ITS) is diagnosed¹. The common symptoms of ITS include postprandial discomfort, dysphagia, vomiting, hemorrhage, chest fullness, inability to belch,

and anemia, but reflux alone is uncommon³. Occasionally, the presentation is more dramatic : bleeding from acute ulceration, acute volvulus with obstruction, or, possibly, gangrene of the stomach with perforation⁴. We report a case of ITS that required Toupet fundoplication after emergent surgery for gastric perforation.

CASE REPORT

A 68-year-old man visited a clinic with complaints of regurgitation and dysphagias of 2 years' duration. He was found to have ITS and was referred to our department in December 2012. He consented to elective surgery, which

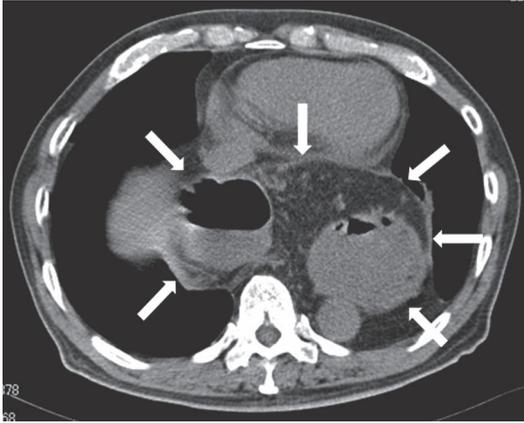
Received for publication, September 17, 2013

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A



B

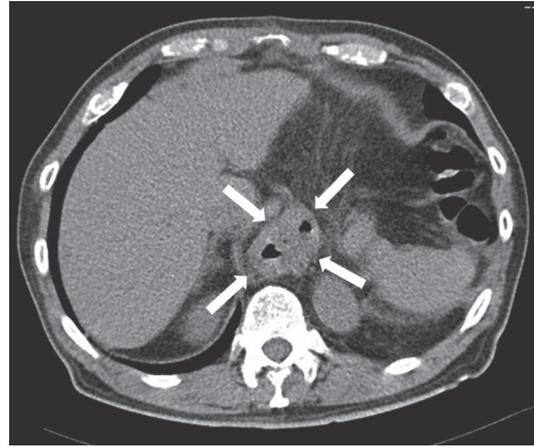


Fig. 1A, B. Computed tomography of the chest revealed intrathoracic stomach (arrows).

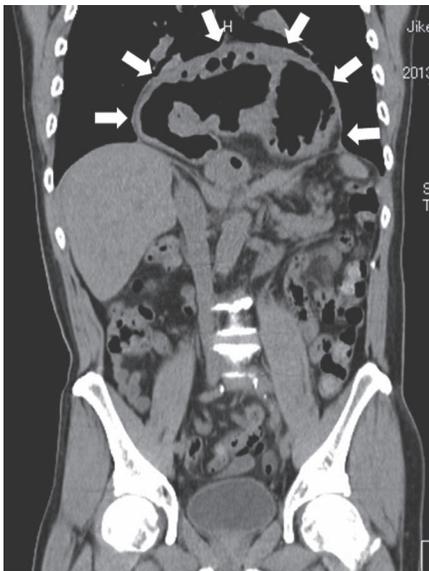


Fig. 2. Frontal section on computed tomography of the chest revealed intrathoracic stomach (arrows).

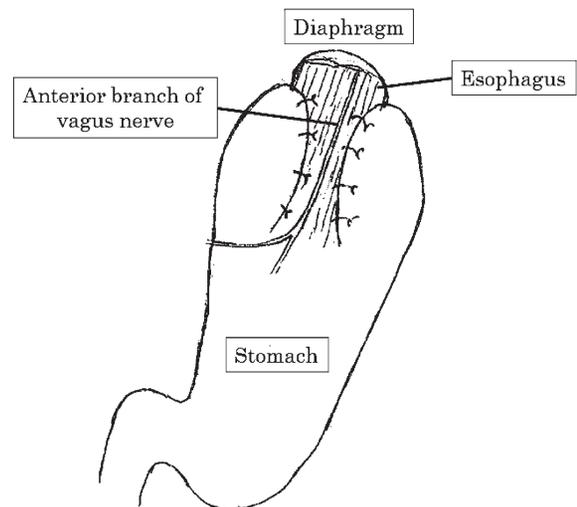


Fig. 3. Illustration of the completion of the operative procedure.

was scheduled for February 2013. To minimize the risk of complications, we advised use of a proton-pump inhibitor and the avoidance of heavy meals. Despite this advice, he experienced acute chest pain and visited the emergency room of a nearby hospital 22 days later of his first visit.

With a diagnosis of viscus perforation, he underwent emergency laparotomy involving simple closure of the perforation site, omental implantation, and peritoneal drainage. Oral food intake was not restarted after surgery, and instead total parenteral nutrition and a proton-pump inhibitor were administered. The postoperative course was uneventful, and he was transferred to our department 20 days

later. Computed tomography of the chest revealed ITS (Fig. 1A, B, 2). Endoscopic examination revealed regurgitation of the gastric contents into the esophagus.

Seven days after admission, laparoscopic Toupet fundoplication was performed as a radical operation for ITS. In the mediastinum the stomach was strongly adherent to the omentum and adjacent tissue. The severe perihial inflammation prevented safe dissection, and bleeding had spread to the surrounding tissue. Therefore, the procedure was converted to open surgery to prevent damage to other organs. Pus discharge was confirmed around the hiatus, and, therefore, the use of mesh to reinforce the hiatus was abandoned because of the risk of infection. Toupet

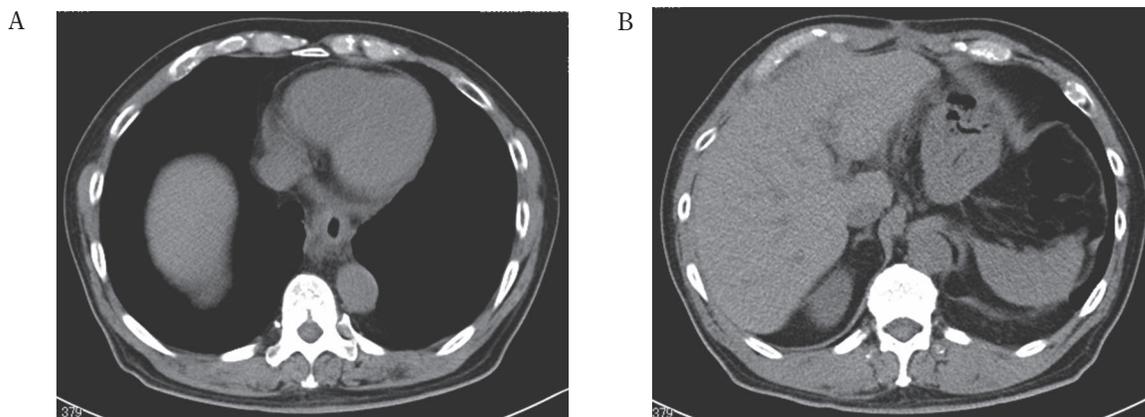


Fig. 4A, B. Computed tomography of the chest 6 months after surgery showed no recurrence of intrathoracic stomach.

fundoplication was performed as an antireflux procedure (Fig. 3). The duration of surgery was 301 minutes, and the blood loss was 560 ml.

Oral intake was restarted on postoperative day 2. The postoperative course was uneventful, and the patient was discharged on postoperative day 9. As of 7 months after surgery, he reports no regurgitation or dysphagia and shows no evidence of recurrent ITS (Fig. 4A, B).

DISCUSSION

Incarceration and obstruction of ITS are potentially devastating complications of PEH. Gastric decompression and resuscitation are important elements of preoperative management of acutely presenting PEH⁵. Current recommendations for the treatment of PEH include prompt repair before the development of complications, including hemorrhage, ischemia, and perforation³. On the other hand, if only partial obstruction is present without ischemia, careful passage of a nasogastric tube may deflate the gastric pouch, thus allowing reduction of volvulus and elective surgery⁶. In the present case, ITS without incarceration or obstruction was diagnosed at the patient's first visit to our clinic. Therefore, we planned elective surgery. Unfortunately, gastric perforation developed before surgery could be performed. The gastric perforation was thought to be causally related to excessive food intake. The patient's stomach was full and might have become strangulated by hiatus and perforated. Shafii et al. and Maruyama et al. have also reported PEH with gastric perforation^{7,8}. In the literature, the timing of operative intervention for PEH without complications has not been well defined⁵. Recent data have

shown that almost two-thirds of patients who require emergency admissions for symptomatic PEH are later discharged without surgery⁹. Apparently, patients with PEH should receive early treatment to avoid incarceration and obstruction.

In the last decade, mesh was introduced for PEH repair. The addition of mesh reinforcement to surgical repair of large hiatal defects is safe and has benefits for quality of life¹⁰. In the present case, we were planning to use mesh to reinforce the esophageal hiatus, but because active infection was confirmed around the hiatus, we decided not to use artificial material for reinforcement. Long-term follow-up will be needed to prevent incarcerated PEH.

Authors have no conflict of interest.

REFERENCES

1. Mittal SK, Bikhchandani J, Gurney O, Yano F, Lee T. Outcomes after repair of the intrathoracic stomach: objective follow-up of up to 5 years. *Surg Endosc.* 2011; 25: 556-66.
2. Menguy R. Surgical management of large paraesophageal hernia with complete intrathoracic stomach. *World J Surg.* 1988; 12: 415-22.
3. Krahenbuhl L, Schafer M, Farhadi J, Renzulli P, Seiler CA, Buchler MW. Laparoscopic treatment of large paraesophageal hernia with totally intrathoracic stomach. *J Am Coll Surg.* 1998; 187: 231-7.
4. Yano F, Stadlhuber RJ, Tsuboi K, Gerhardt J, Filipi CJ, Mittal SK. Outcomes of surgical treatment of intrathoracic stomach. *Dis Esophagus.* 2009; 22: 284-8.
5. Bhayani NH, Kurian AA, Sharata AM, Reavis KM, Dunst CM, Swanstrom LL. Wait only to resuscitate: early surgery for acutely presenting paraesophageal hernias yields better outcomes. *Surg Endosc.* 2013; 27: 267-71.

6. Iannelli A, Fabiani P, Karimjee BS, Habre J, Lopez S, Gugenheim J. Laparoscopic repair of intrathoracic mesenterioaxial volvulus of the stomach in an adult : report of a case. *Surg Today.* 2003 ; 33 : 761-3.
7. Shafii AE, Agle SC, Zervos EE. Perforated gastric corpus in a strangulated paraesophageal hernia : a case report. *J Med Case Rep.* 2009 ; 3 : 6507.
8. Maruyama T, Fukue M, Imamura F, Nozue M. Incarcerated paraesophageal hernia associated with perforation of the fundus of the stomach : report of a case. *Surg Today.* 2001 ; 31 : 454-7.
9. Polomsky M, Hu R, Sepesi B, O'Connor M, Qui X, Raymond DP, et al. A population-based analysis of emergent vs. elective hospital admissions for an intrathoracic stomach. *Surg Endosc.* 2010 ; 24 : 1250-5.
10. Chilintseva N, Brigand C, Meyer C, Rohr S. Laparoscopic prosthetic hiatal reinforcement for large hiatal hernia repair. *J Visc Surg.* 2012 ; 149 : e215-20.