Successful Treatment of an Esophagopericardial Fistula with Pyopericardium That Developed after Laparoscopic Total Gastrectomy for Gastric Cancer by Intraoperative Stent Insertion

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Esophagopericardial fistula (EPF) is a rare and serious medical condition induced by benign and malignant causes. Surgery is the mainstay of treatment for benign EPF. However, there have been few reports of benign EPF treated by endoscopic stent insertion. We performed a laparoscopic total gastrectomy for treatment of a gastric cancer located at the cardia in a 62-year-old patient. A benign EPF occurred as a postoperative complication 14 days after surgery. We successfully managed the EPF through emergent laparoscopic pericardial window formation and insertion of a fully covered self-expandable metal stent during operation. The patient is being followed up without complications in the outpatient department after stent removal. (Korean J Helicobacter Up Gastrointest Res 2015;15:279-282)

Key Words: Fistula; Gastrectomy; Stomach neoplasms; Complications; Stents

INTRODUCTION

Esophagopericardial fistula (EPF) is a rare and fatal clinical entity induced by benign, malignant and traumatic causes. However, EPF rarely occurs as a complication after surgery for gastric cancer. Recently, successful treatments of EPF with stent insertions have been reported. Herein, we report a case of EPF that occurred after laparoscopic total gastrectomy (LTG) with intrathoracic esophagojejunostomy for gastric cancer involving the cardia. The EPF was successfully treated by insertion of a fully covered self-expandable metal stent (SEMS) intraoperatively.

CASE REPORT

A 62-year-old man who had received LTG for gastric cancer located at the cardia 2 weeks ago visited our emergency room with complaints of dyspnea. Blood pressure was 93/83 mmHg. Pulse rate ranged between 100 and 114 beats/min and was regular and consistent. Body temperature was 36.6°C. Physical examination revealed systolic murmurs and decreased breath sounds in the left lower lobe without crackle. Electrocardiography revealed ST elevation in leads II, III, aVF, V4, V5 and V6. In laboratory examination, white blood cells were increased to 25.790 cells/μL with a leftward shift (88% polymorphonuclear cells). The CRP was also increased to 169.80 mg/L. Cardiac enzyme was normal (troponin T <0.010 μg/L, CK-MB 2.0 μg/L). Echocardiography revealed preserved ejection fraction (61%) and pericardial effusions without cardiac tamponade. A plain chest radiography revealed pneumopericardium with large amounts of pericardial and pleural effusion (Fig. 1). The patient underwent emergency surgery under the impression of pyopneumopericardium. Laparoscopic exploration revealed adhesion of the esophagojejunostomy site with the posterior region of pericardium. Pericardial window formation revealed turbid fluid collections with inflammatory debris in the pericardium and thus pericardial irrigation and drainage with catheter insertion was performed (Fig. 2). Severe inflammatory changes were
Contrast enhanced computed tomography scan in a 62-year-old male showing a hydropneumopericardium and esophagopericardial fistula.

Cytology of the pericardial fluid demonstrated dominant count of neutrophils. However, there were no malignant cells. Streptococcus anginosus was cultured from the pericardial fluid present around the fistula and primary closure was expected to be difficult. Therefore, an upper endoscopy was performed during operation for insertion of a SEMS. Endoscopy revealed a fistula opening at the level of the anastomosis site. To seal the EPF, an 8 cm length fully covered esophageal stent (Shim’s stent: M.I Tech Co. Ltd., Seoul, Korea) was placed (Fig. 3). The procedure was well tolerated with no acute complications. After stent insertion, the patient’s pericardial effusion decreased and ultimately the drainage catheter was removed after 7 days. A swallow study with water-soluble contrast medium (gastrografin) showed no leakage after 9 days and migration did not occur. The patient started oral feeding after 12 days of surgery.

Fig. 2. Views during laparoscopic exploration. (A) Adhesion of the esophagojejunostomy (EJ) site with the pericardium (P) and lung. (B) Turbid fluids gushing out after incision of the pericardium. (C) Pericardial window formation for irrigation of pericardium and drainage of effusion.
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Fig. 3. Fully covered esophageal stent (arrows) inserted during operation for sealing of the esophagopericardial fistula.

Fig. 4. Contrast examination of the esophagus shows no leakage after stent removal.

cardial fluid and left pleural fluid. The patient was treated with intravenous meropenem and vancomycin for 21 days. The patient was discharged in a tolerable state. The stent was removed with minor bleeding after 38 days in the outpatient clinic. Follow-up radiographic study demonstrated no evidence of leakage after 42 days (Fig. 4).

DISCUSSION

An EPF is a rare and serious medical condition.1,2 Benign and traumatic causes account for 75% of EPF and the remainders are due to malignant causes.1 Postoperative EPFs induced as a complication of intrathoracic operations including esophagectomy, esophagojejunostomy and esophagogastrectomy have been reported occasionally.3,4,9,10 Our patient received LTG with intrathoracic esophagojejunostomy for an adenocarcinoma located at the cardia. Intrathoracic partial esophagectomy was needed to achieve an adequate tumor free proximal margin. This may have been the cause of EPF in our case, because the anastomosis site located adjacent to the pericardium.

Several complications related to the esophagojejunal anastomosis site, such as leakage, stricture, bleeding, and Roux-stasis may occur after LTG.11 However, fistulas associated with the esophagojejunostomy site after LTG is an uncommon complications. Recently, a case of aorto-en-
teric fistula at the esophagojejunostomy site after LTG for advanced gastric cancer located at the esophagogastric junction was reported.12 Although two EPF cases associated with open total gastrectomy for gastric cancer have been reported,3,4 there have been no reports of EPF induced by LTG for gastric cancer. To the best of our knowledge, our case is the first report of an EPF induced by LTG for gastric cancer.

The development of EPF after surgery is a rare event and currently there is no guidelines regarding the management of EPF. Treatment depends on the complications and cause of EPF. If an EPF is accompanied with a cardiac tamponade or pyopericardium, pericardial drainage with intensive antibiotics use and closure of the fistula should be performed. Surgery is regarded as the main stay of treatment for benign EPF in order to close the fistulous tract and to separate the esophageal wall from the pericardium.13 However, severe inflammations in surroundings of fistula as our case make closure by surgery impossible. In these cases, SEMS placement can be considered as an alternative treatment of choice. Recently, insertion of SEMS has been to be successful in the management of an benign EPF.5,14 However, most previous reports of SEMS insertion occurred after radiofrequency ablation for atrial fibrillation.8,14 To our knowledge our case is the first report of a benign EPF after LTG for gas-
tric cancer that was successfully treated by laparoscopic pericardial window formation and intraoperative endoscopic stent insertion.

EPF has a high mortality rate and prompt diagnosis with treatment is very important for survival.1,15 Our patient was immediately treated by emergent operation with pericardial window formation as soon as the possibility of EPF was suspected. Also, a fully covered SEMS was immediately placed for the sealing of fistulous tract during operation. El Hajj et al.16 reported that a shorter time until stent insertion was associated with successful primary closure of esophageal leakages, fistula and perforation. Stent insertion after operation might be risky, considering patient’s critical status. In addition, immediate occlusion of the fistulous tract allows early oral feeding without additional operations such as feeding jejunostomy.

Benign EPF induced by LTG for gastric cancer is a rare complication. Early diagnosis and treatment are necessary for successful management. We performed a successful treatment of EPF by a complication of LTG with intrathoracic esophagojejunostomy for gastric cancer through emergent pericardial window formation and insertion of a SEMS during operation. In conclusion, immediate endoscopic insertion of a fully covered SEMS during operation can be considered as an effective treatment method for serious patients with benign EPF induced by intrathoracic operation.

REFERENCES