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Izumi, Daisuke

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University

Watanabe, Masayuki

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University

Nagai, Yohei

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University

Harada, Kazuto

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University

他

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Case Report

T-Tube Drainage and Intercostals Muscle Flap Reinforcement for the Management of Intrathoracic Esophago-Gastric Anastomotic Leakage with Pyothorax : A Case Report

Daisuke IZUMI, Masayuki WATANABE, Yohei NAGAI, Kazuto HARADA, Yu IMAMURA, Shiro IWAGAMI, Yuji MIYAMOTO, Masaaki IWATSUKI, Yoshifumi BABA and Hideo BABA

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University

Abstract

We herein report a case of mediastinitis with left pyothorax due to anastomotic leakage after totally laparoscopic proximal gastrectomy (TLPG) successfully managed by T-tube placement and intercostal muscle flap reinforcement. A 51-year-old man, who had undergone a TLPG at a referring hospital, was referred for fever, elevated inflammation markers, and pleural effusion on postoperative day 3. A computed tomography (CT) scan revealed mediastinitis with left pyothorax caused by anastomotic leakage. An emergency operation was performed through a left thoracotomy. After an irrigation of the thoracic cavity and a decortication of the pleura, we found a perforation in the left side of the anastomosis. We decided to insert a T-tube through the perforation and performed intercostal muscle flap reinforcement. He got acute respiratory distress syndrome but recovered after treatment in Intensive Care Unit for 24 days. Oral intake was started on day 45 and he was discharged on day 71. A T-tube drainage and wrapping with the intercostal muscle flap is a useful choice of treatment for intrathoracic anastomotic leakage with severe inflammation.

Key words : T-tube · Intercostals muscle flap · LAPG · Anastomotic leakage · Pyothorax

Introduction

An esophago-gastric anastomotic leakage in the mediastinum may cause life-threatening complications, such as pyothorax and mediastinitis¹⁾. We report herein a case of an anastomotic leakage with severe mediastinitis and left pyothorax after totally laparoscopic proximal gastrectomy (TLPG) successfully managed by a T-tube placement and intercostal muscle reinforcement.

Case presentation

A 51-year-old man, who had undergone TLPG for an early cancer of the gastric cardia with

esophageal invasion at a referring hospital three days before, was referred for high fever, pleural effusion and elevated inflammatory reaction. At the time of admission, the patient suffered from systemic inflammatory reaction syndrome (SIRS). He showed sinus tachycardia and tachypnea, and the laboratory data demonstrated an elevated white blood count ($13.8 \times 10^9/L$) and C-reactive protein (22.2 mg/dL). A computed tomography (CT) scan showed fluid collection in both the mediastinum and the left thoracic cavity. An upper gastrointestinal series revealed an anastomotic leakage at the esophago-gastric anastomosis.

An emergency operation was performed

Hideo BABA, MD, PhD, FACS

Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University, Kumamoto University Hospital, 1-1-1 Honjo Chuo-ku Kumamoto-shi, Kumamoto, 860-8556, JAPAN

Tel : +81-96-373-5211 Fax : +81-96-371-4378

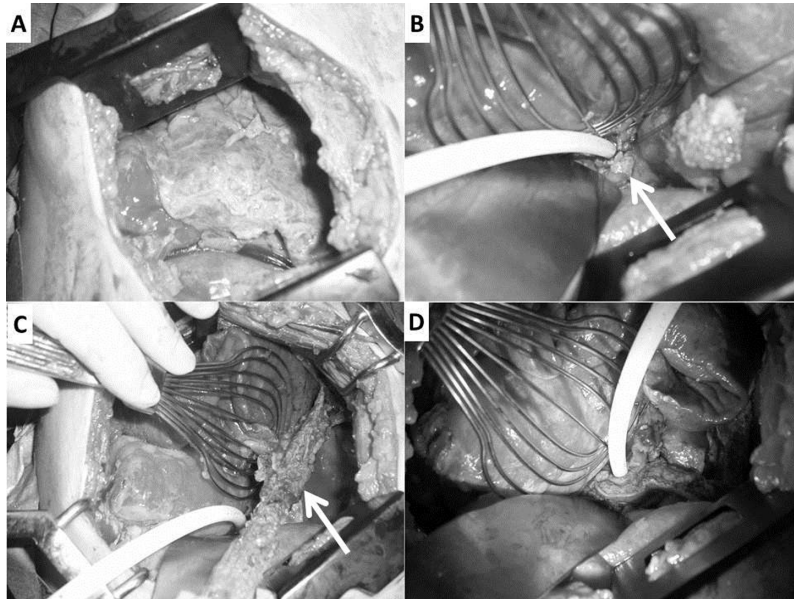


Fig. 1 (A) There were abundant dirty effusion in the thoracic cavity and the pleura was covered with purulent fibrous materials. (B) The arrow points a 24Fr T-tube inserted through the perforation. (C) The arrow points a 6th intercostal muscle flap. (D) The anastomosis was wrapped with a flap.

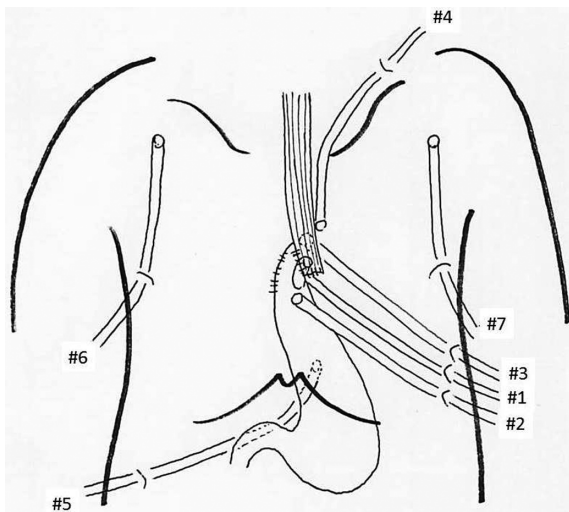


Fig. 2 Total six drainage tubes were inserted into the mediastinum and the bilateral thoracic cavity. #1 was T-tube inserted through the perforation. #2 and #3 were drainage tube inserted in front and back of the anastomosis through left thoracic cavity. #4 and #5 were also drainage tube inserted into mediastinum through neck and abdomen. #6 and #7 were chest tube inserted into the right and left thoracic cavity.

through a left anterolateral thoracotomy at the sixth intercostal space. There were abundant dirty effusion in the thoracic cavity and the pleura were covered with purulent fibrous materials (Fig. 1A). Then an irrigation of the thoracic cavity

and a decortication of the purulent pleura were performed. The anastomosis was located in the lower mediastinum and a perforation, which was approximately five millimeters in length, was found in the left side of the anastomosis. As the tissue around the perforation seemed to be too weak to suture primarily, a 24Fr T-tube was inserted through the perforation (Fig. 1B) and the anastomosis was wrapped with a 6th intercostal muscle flap (Fig. 1C, D). Then we opened and irrigated neck through upper mediastinum because the patient's neck skin appeared reddish. 16Fr double lumen tube was inserted from neck to anastomotic site through mediastinum. We also performed laparotomy and irrigated around esophageal hiatus. 8mm multi drainage tube was inserted from right upper abdomen to esophageal hiatus. Total six drainage tubes were inserted into the mediastinum and the bilateral thoracic cavity (Fig. 2).

He got a respiratory distress syndrome after the surgery and needed an intensive care for 24days. The T-tube was exchanged for a Nelaton catheter on day 38, and the Nelaton catheter was removed on day 55. Oral intake was started on

day 45 and he was discharged on day 71.

Discussion

Perforation of the thoracic esophagus is a life-threatening condition that may rapidly progress to fatal mediastinitis, peritonitis, and septic shock. Thus, an early diagnosis and appropriate treatment are essential. Late (> 24hrs) recognition of an esophageal perforation is a very difficult clinical challenge, with a mortality as high as 50%²⁾. In this case, the duration from occurrence of the leakage to treatment was over 72 hours.

The choice of management depends on a number of factors, including etiology, location of the perforation, condition of the surrounding tissue, the patient's general condition, and the length of time from injury to diagnosis. There are a wide range of surgical repair options, including primary suture repair, reinforced primary repair with pleural, omental, or intercostal flaps, T-tube drainage, diversion and exclusion procedures, and esophageal resection with either immediate or delayed reconstruction²⁾. In this case, because of the late diagnosis, the tissue around the anastomosis was too weak to close primarily. Therefore, we decided to use T-tube drainage and intercostals muscle flap reinforcement. T-tube can decompress the pressure of intra gastroenterological tract and promote fistulization.

Although there is no report on the use of T-tube to treat the intrathoracic anastomotic leakage, there were 42 case reports on the insertion of T-tube to treat the esophageal perforation^{2)~14)}. The prognosis of patients treated with T-tube drainage has been reported to be favorable, but it depends on the time from the injury to the treatment. There was no mortality in patients who treated within 24 hours from the injury, while it is reported that 4 of 27 patients who treated after 24 hours died. These results indicate again that the early diagnosis and treatment is extremely important. However, the data also suggest that T-tube drainage is still useful to treat the cases with late diagnosis. We

performed intercostal muscle flap reinforcement because the patient's general condition was so poor that another leakage might make him fatal. The intercostal muscle flap is less invasive and can be performed in patients with poor general condition.

In summary, we report a case of anastomotic leakage with severe mediastinitis and left pyothorax after TLPG successfully managed by T-tube placement and intercostal muscle flap reinforcement. Both an early diagnosis and treatment, and additional treatment corresponding to general condition are essential to save patients with leakage in mediastinum after TLPG.

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(和文抄録)

噴門側胃切除後の縫合不全に対し T-tube 留置, 肋間筋弁被覆が有効であった一例

熊本大学大学院 消化器外科学

泉 大輔, 渡邊雅之, 長井洋平, 原田和人, 今村 裕, 岩上志朗,
宮本裕士, 岩槻政晃, 馬場祥史, 馬場秀夫

【症例】 51 歳男性. 前医にて胃噴門部早期胃癌に対し完全鏡視下噴門側胃切除施行. 術後 3 日目発熱, 胸腔ドレーン排液の混濁化, 炎症反応上昇あり, 縫合不全による縦隔炎・左膿胸の診断で, 再手術目的で当科紹介. 開胸すると胸腔内全体に混濁した胸水貯留, 左肺全面が膿胸膜に覆われており, これを剥離し洗浄した. 吻合部左側に 5mm の穿孔部が 2 個連続しており entry hole の縫合不全と考えられた. 高度の炎症により周囲の組織は脆弱で縫合閉鎖は不可能であり, T-tube24Fr を縫合不全部から挿入し, 吻合部に留置した. 縫合不全部近傍の組織を可及的に縫合閉鎖した上で, その周囲を覆うように肋間筋弁にて被覆した. 左胸腔ドレーンを計 4 本留置し手術を終えた. 術後は長期の集中管理と胸腔ドレーンからの洗浄, 入れ替えを必要としたが, 徐々に炎症は改善し, 当院術後 71 日目に退院した.

【まとめと考察】 噴門側胃切除術後縫合不全に対し, T-tube 留置と肋間筋弁被覆が有効であった症例を経験した. 食道浸潤を伴う胃癌に対する噴門側胃切除後の縫合不全は縦隔炎・膿胸を来し致死的になりうる. T-tube 留置と肋間筋弁被覆は脆弱化した吻合部を安全に瘻孔化でき, 膿胸を合併した縫合不全の治療に有用と考えられた.