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Revascularization for cavernous transformation radical lymphadenectomy in the treatment of gastric cancer: A case report

Hisaaki Yoshinaka, Kazuaki Tanabe*, Ryuichi Hotta, Yoshihiro Saeki, Hideki Ohdan

Department of Gastroenterological and Transplant Surgery, Hiroshima University, 1-2-3 Kasumi, Minami-ku, Hiroshima, Hiroshima 734-8551, Japan

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ABSTRACT

INTRODUCTION: There are few reported cases of cavernous transformation of the portal vein (CTPV). CTPV is usually found by accident because most patients are asymptomatic at presentation. This paper reports a case of early gastric cancer with CTPV that required gastrectomy and revascularization.

PRESENTATION OF CASE: A 71-year-old man diagnosed with early gastric cancer, which was classified as clinical Stage IA (T1b, N0, M0) according to the TNM classification criteria for gastric cancer, was admitted to our hospital. Preoperative computed tomography (CT) revealed portal vein stenosis, CTPV, and esophageal varix. CT angiography showed that portal flow was maintained by the left gastric vein-right gastric vein (LGV-RGV) shunt. We had to perform lymphadenectomy while maintaining the hepatic blood flow. We performed distal gastrectomy with lymph node dissection including the vessel of the lesser curvature without massive bleeding. Postoperative course was uneventful, and CT examination performed in the 7th postoperative day revealed good blood flow from the reconstructed collateral vessels. The patient had no recurrence of gastric cancer during the postoperative period of 1 year.

CONCLUSION: Diseases that cause intra-abdominal inflammation, such as pancreatitis and choledocholithiasis, might cause CTPV. Thus, patients with this medical history should be carefully assessed for CTPV to avoid intraoperative complications, such as massive bleeding or ischemia. When we perform operation a case with CTPV, we must pay meticulous attention. In our case, we encountered some difficulties in the surgical procedure, especially with respect to the dissection of the regional lymph nodes for gastric cancer.

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1. Introduction

Cavernous transformation of the portal vein (CTPV) usually occurs with long-standing portal vein thrombosis, which developed from the dilatation of multiple small vessels in and around the recanalized main portal vein [1,2]. The discovery rate of CTPV is about one of 2000 using ultrasound (US) imaging screening for the abdomen [3]. Cavernous transformation of the portal vein is usually found by accident because most patients are asymptomatic at presentation. Surgical procedures used to manage CTPV have a high risk of intraoperative bleeding, especially those operative procedures around the liver hilum. We herein report and describe an asymptomatic case of CTPV, which was accompanied with early gastric cancer. We experienced a case of the early gastric cancer that blood flow of portal vein was depend on LGV-RGV shunt and revascularization of LGV-RGV shunt. This case report was prepared in accordance with the SCARE criteria [4].

2. Presentation of case

A 71-year-old man was admitted to our hospital for the treatment of gastric cancer through an operation. Two years ago, he had cholangitis due to choledocholithiasis, which was detected by endoscopic sphincterotomy (EST). Endoscopic findings revealed a tumor located at the anterior wall in the lower third of the stomach (Fig. 1). Moreover, endoscopic ultrasound imaging (EUS) showed that the depth of tumor invasion reached the submucosal layer of the gastric wall. No lymph node or remote metastases were found in the preoperative computed tomography (CT). Cavernous transformation of the portal vein was diagnosed using CT images that revealed portal vein stricture and increased presence of collateral veins around the liver hilum and esophagus. The hepatic portal flow was maintained by the left gastric vein (LGV)-right gastric vein (RGV) from the superior mesenteric vein (SMV). CT angiography showed similar findings with CT that indicate portal blood flow was maintained by the RGV-LGV shunt (Figs. 2 and 3). The patient's gastric cancer was classified as clinical Stage IA (T1b, N0, M0) according to the TNM classification criteria for gastric cancer [5]. The laboratory test findings revealed that the levels of aspartate amino transferase (AST) and alanine amino transferase (ALT)

* Corresponding author.

E-mail address: ktanabe2@hiroshima-u.ac.jp (K. Tanabe).

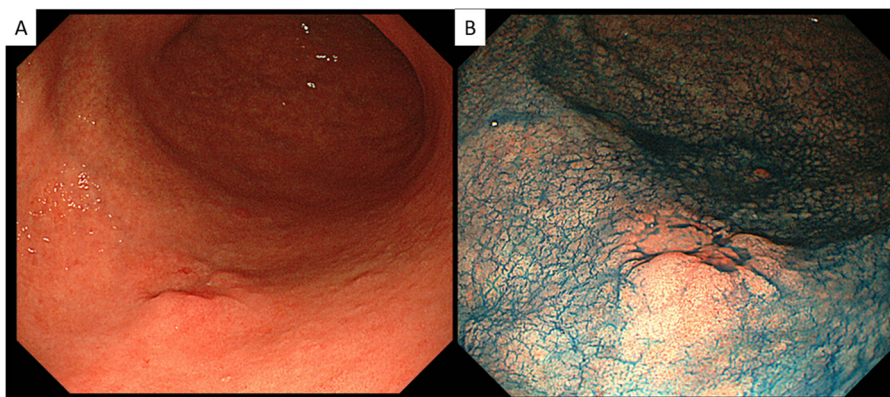


Fig. 1. Upper gastrointestinal endoscopy: A) A flat and elevated lesion with an unclear border (size: 15 mm, 0-IIa+IIc) localized at the anterior wall in the lower third of the stomach. B) Endoscopic view after acetic acid was sprinkled.

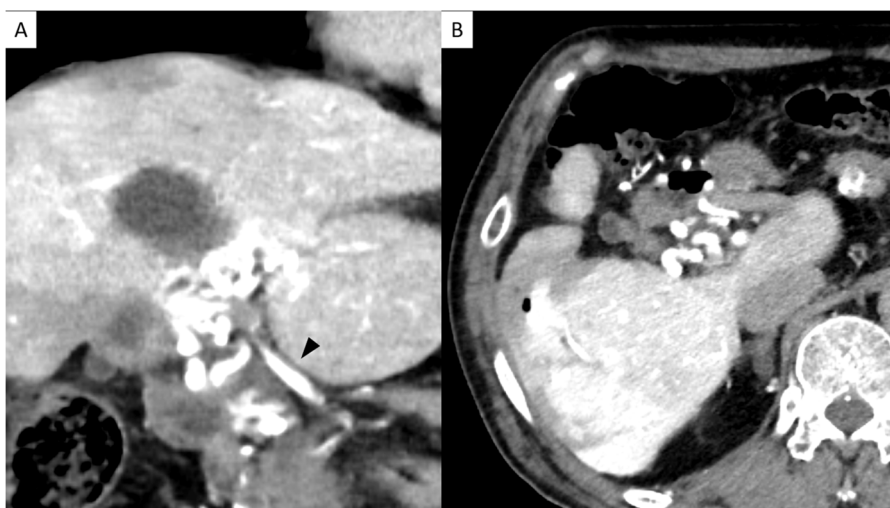


Fig. 2. A) Axial CT angiography images of the abdomen revealed portal vein stricture (arrow) and increased presence of collateral veins around the liver hilum. B) Coronal CT angiography image of the abdomen revealed similar findings.

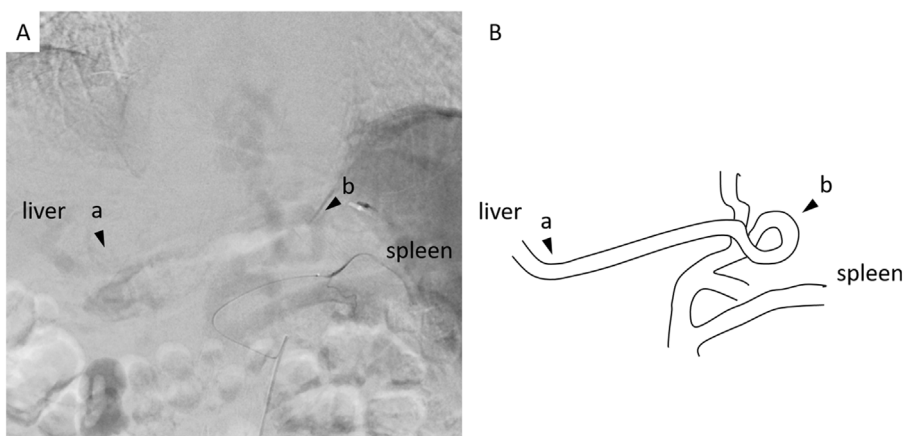


Fig. 3. A) CT angiography of portal phase. B) A schematic diagram of the vessel for CT angiography showed that the blood stream of the liver was maintained by the RGV-LGV shunt. (arrow a: right gastric vein, arrow b: light gastric vein).

were within normal ranges. The patient had normal liver function (Child-Pugh: A). Tumor markers, such as carcinoembryonic antigen (CEA) and CA19-9, were in normal range. The Japanese gastric cancer treatment guidelines requires gastrectomy with D1+ lymphadenectomy for this classification of gastric cancer [5]. However, LGV and RGV ligation might result in liver ischemia in this

case. Thus, we planned to revascularize the LGV and RGV after the lymphadenectomy. During the operation, portal vein pressure of the SMV was measured and liver flow was checked using US. We performed LVG-RVG shunt, vascular anastomosis, lymph node dissection, and distal gastrectomy (Fig. 4). The hepatic portal flow was maintained before and after the lymphadenectomy and revascular-

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