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Hepatopancreatoduodenectomy for perihilar cholangiocarcinoma following laparoscopic total gastrectomy



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ABSTRACT

INTRODUCTION: Surgical resection is the only curative treatment for perihilar cholangiocarcinoma. However, Hepatopancreatoduodenectomy (HPD) procedure remains controversial in regard to the balance between the survival benefit and high risk of mortality and morbidity.

PRESENTATION OF CASE: A 72-year-old man who was revealed the dilation of intrahepatic hepatic duct by computed tomography after laparoscopic total gastrectomy was referred to our hospital. The patient had undergone laparoscopic total gastrectomy with Roux-en-Y esophageal-jejunostomy reconstruction 1 year previously. By several examinations, we consequently diagnosed this case as a perihilar cholangiocarcinoma and performed HPD. Histological examination revealed a well differentiated adenocarcinoma without lymph-node metastasis and a negative margin of liver parenchyma and pancreas. He was recovered from a grade B pancreatic fistula by conservative therapy and discharged post-operatively on day 64 in good health. The patient received postoperative systemic chemotherapy with gemcitabine for 6 months. 16 months after surgery, the patient has had no recurrence.

DISCUSSION: HPD for biliary and cancers after total gastrectomy is a challenging procedure with high morbidity and mortality rates. However, this procedure can provide the chance for long-term survival if curative resection is feasible.

CONCLUSION: This case was the first report of hepatopancreatoduodenectomy following laparoscopic total gastrectomy.

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1. Introduction

Surgical resection is the only curative treatment for perihilar cholangiocarcinoma. However, the 5-year survival rate for this technique is unsatisfactory even after curative resection, and is reported to be 33.1% for cholangiocarcinoma carcinoma [1]. Despite this poor survival rate and high morbidity and mortality over the first decade after diagnosis, hepatopancreatoduodenectomy (HPD) is routinely performed at several specialized centers [2]. With recent progress in diagnostic procedures, surgical techniques and perioperative patient care, many studies have shown increased long-term survival rates following this aggressive procedure. However, to our knowledge, there has been no reported case of perihilar cholangiocarcinoma treated with hepatopancreatoduodenectomy (HPD) following total gastrectomy thus far. Here, we report the

favorable survival outcome in a patient who underwent HPD for perihilar cholangiocarcinoma that developed after laparoscopic total gastrectomy for stomach cancer. This work has been reported in line with the SCARE criteria [3].

2. Case presentation

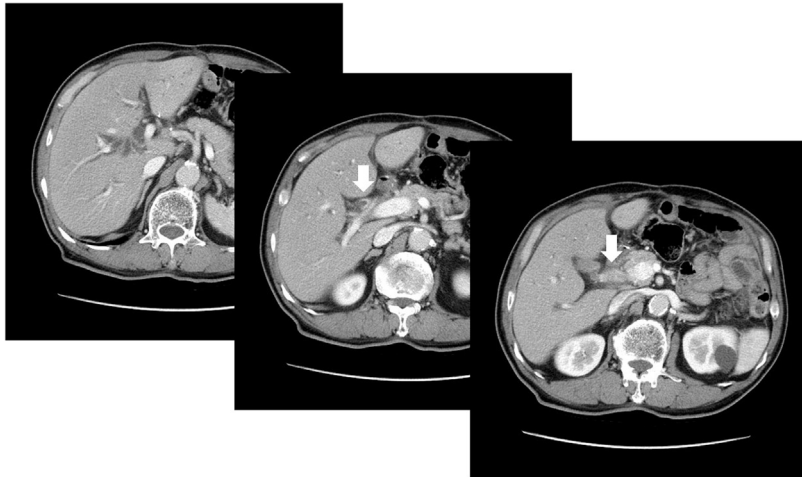
A 72-year-old man who was revealed the dilation of intrahepatic hepatic duct by computed tomography after total gastrectomy was referred to our hospital. The patient had undergone laparoscopic total gastrectomy with Roux-en-Y esophageal-jejunostomy reconstruction 1 year previously. Pathological examination of the resected stomach specimen revealed a well-differentiated tubular adenocarcinoma invading the mucosal layer without lymph-node metastasis. Abdominal computed tomography (CT) revealed a mass on the perihilar bile duct, with dilation of the intrahepatic bile duct. Percutaneous *trans*-hepatic biliary drainage (PTBD) was performed, but the cytology specimen was positive for malignant cells; therefore, the patient was diagnosed with perihilar cholangiocarcinoma.

After PTBD, liver function test results were within the normal limits: total bilirubin, 0.6 mg/dl; aspartate aminotransferase, 17

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A : Computed tomography



B : Cholangiography



Fig. 1. Computed tomography and cholangiography.

A: Computed tomography (CT) revealed slight thickening of the bile duct over the pancreatic head from the hepatic hilum. White arrow indicates the thickness of the bile duct and main tumor.

B: Cholangiography revealed dilation of the left and right hepatic duct and stricture of the perihilar bile duct.

IU/l; alanine aminotransferase, 16 IU/l; γ -glutamyl transpeptidase, 32 IU/l; and alkaline phosphatase, 225 IU/l. Serum carcinoembryonic antigen level was 4.2 IU/l, and carbohydrate antigen 19-9 level was 34.7 IU/l. The plasma clearance rate for 15 min of indocyanine green was slightly elevated at 12.3%. Computed tomography (CT) revealed slight thickening of the bile duct over the pancreatic head from the hepatic hilum (Fig. 1A). The thickened bile duct did not invade the portal vein or the hepatic artery. Cholangiography revealed dilation of the left and right hepatic duct and stricture of the perihilar bile duct (Fig. 1B). Intraductal ultrasonography revealed invasion from the intrapancreatic bile duct into the hepatic hilum, predominantly from the left bile duct. We consequently diagnosed this case as a perihilar cholangiocarcinoma.

Although future function of the remaining liver was sufficient, we preoperatively performed right PV embolization (PVE) to improve liver function. Four weeks after PVE, the patient underwent HPD. Postoperatively, he developed a grade B (International Study Group of Pancreatic Surgery) pancreatic fistula. This complication was resolved by conservative therapy. Macroscopically, the mass at the hepatic hilum invaded the intrapancreatic and left bile ducts (Fig. 2). Histological examination revealed a well dif-

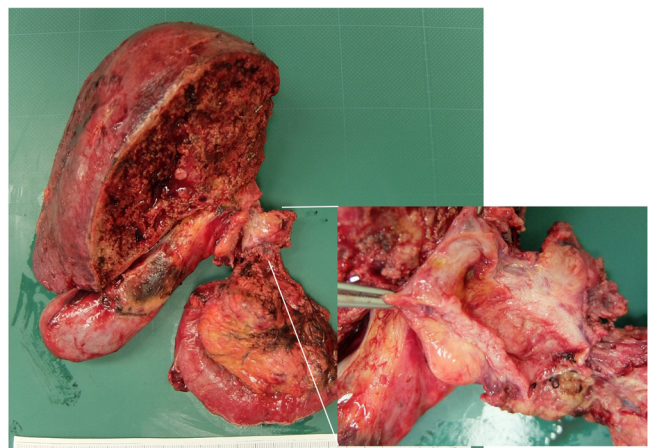


Fig. 2. Macroscopic findings. Macroscopically, the mass at the hepatic hilum invaded the intrapancreatic and left bile duct.

ferentiated adenocarcinoma without lymph-node metastasis and a negative margin of liver parenchyma and pancreas. The patient was discharged post-operatively on day 64 in good health. The patient received postoperative systemic chemotherapy with gemcitabine for 6 months. 16 months after surgery, the patient has had no recurrence.

3. Discussion

Hepatopancreatoduodenectomy (HPD) for perihilar cholangiocarcinoma is one of the most challenging surgeries, and even today, this surgery is associated with high morbidity [4]. However, some laterally advanced cholangiocarcinomas progress via ductal spread or local invasion. The main goal of definitive surgery is R0 resection and in some cases, HPD may be performed. With recent progress in diagnostic procedures, surgical techniques and perioperative patient care, many studies have shown increased long-term survival after this aggressive procedure [5]. Also, 5-year survival rate in literature review for HPD is 3–50% [6], which is better than that of a reported series of subjects with unresectable tumors, suggesting that aggressive resection may be justified in well selected and prepared patients with advanced biliary and gallbladder cancers [7]. In our case, which was intended to result in curative resection, it was assumed that HPD was required for curative resection because the thickness of the bile duct had infiltrated into a significant region.

Although a small number of cases have been reported, involving both pancreatoduodenectomy (PD) and total gastrectomy [8,9], no report has yet been published that describes HPD following total gastrectomy. PD in patients with previous total gastrectomy (TG) is difficult, and can be limited by adhesions and anatomical complexity around the pancreas, subsequent to the previous total gastrectomy procedure. In our patient, we performed HPD with resection of the small intestine and division at a point distal to the previous enteroenterostomy; a second Roux limb was constructed to permit anastomosis to the pancreas and bile duct. In particular, because total gastrectomy was performed by laparoscopic surgery in our case, it was easier and incurred less adhesion than open surgery.

Nutritional status might be poor following total gastrectomy, and might be worse after HPD following TG. However, in our case, nutritional status has been good after discharge without special nutritional management.

In conclusion, with careful perioperative management, we successfully performed HPD in a patient with perihilar cholangiocarcinoma after laparoscopic total gastrectomy; this represents the first report of HPD following total gastrectomy.

Conflicts of interest

All authors have no conflicts of interest.

Funding

None.

Ethical statement

The patient provided permission to publish this case, and his identity has been protected.

Ethical approval

This is case report. I had the consent of the patient.

Consent to publish

We obtained the consent to publish from the patient.

Consent

I had the approval of Tokyo Medical University Hachioji Medical Center Ethics Committee. And I had the consent of the patient.

Author contribution

Acquisition of data: Author N Chiba.
Analysis and interpretation: N Chiba.
Manuscript drafted by Author N Chiba.
Revision: Author N Chiba and S Kawachi.

Guarantor

The Guarantor is the corresponding author.

Competing interests

All authors declare that they have no competing interests.

Registration of research studies

None.

Acknowledgments

There are no other relationships/conditions/circumstances that present a potential conflict of interest.

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