

Extended local resection for treatment of periampullary carcinoma of vater

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BACKGROUND: The trauma caused by pancreatoduodenectomy for periampullary carcinoma of vater is often severe and extensive. The purpose of this study was to evaluate the effect of extended local resection in the treatment of periampullary carcinoma of vater.

METHODS: The extra-hepaticobiliary tract, the confluence of the pancreatic and biliary duct, vater ampulla and duodenal papilla were resected en bloc in 8 patients with periampullary carcinoma from 1995 to 1998.

RESULTS: One patient died perioperatively. Duodenal obstruction developed postoperatively in one of 7 survived patients and was relieved after reoperation. All the 7 patients were followed up for more than 6 months without recurrence.

CONCLUSION: Extended local resection fulfils the task of radical treatment of periampullary malignancy.

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KEY WORDS: duodenal neoplasms; surgical procedures

Introduction

The traditional treatment for periampullary carcinoma of vater is pancreatoduodenectomy. The trauma caused by this operation is severe and extensive. It is known that the periampullary carcinoma of vater is differentiated obviously from the pancreas head carcinoma in biological character and treatment therapy.^[1,8] The vater ampullary carcinoma is 6.8%^[2] to 12.7%^[3] in periampullary carcinoma of vater, and the resection rate of the former is 76.5% to 100%, the 5-year survival rate is 34% to 55%.^[4] The prognosis is determined not by operation itself but biological character

of tumor. It was reported in literatures of recent years that the new surgical therapy of the vater ampullary carcinoma is en bloc resection of duodenal papilla and vater ampulla.^[5-7] So extended local resection was performed in 8 patients with periampullary carcinoma of vater at our hospital from October 1995 to March 1998, and it fulfils the task of radical treatment of periampullary malignancy.

Methods

Patients

In 8 patients with periampullary carcinoma of vater, 6 were men and 2 women, aged on average 58.5 years (range 31-72 years). Jaundice was seen as the first symptom in all these patients, who were confirmed by CT, magnetic resonance cholangiopancreatography. Pathological examination showed moderately differentiated periampullary adenocarcinoma of vater in 4 patients, cystic dilation of the common bile duct, malignant changes of the confluence of the pancreatic duct in 3 patients, moderately differentiated adenocarcinoma of the pancreatic head, and dilation of the common bile duct in 1.

Methods

The duodenum and the head of the pancreas were turned to the left by the Kocher maneuver to confirm the diagnosis of periampullary carcinoma of vater. The gallbladder was freed, then the common hepatic duct was transected and the hepatoduodenal ligament was skeletonized. When the confluence of the pancreatic and bile ducts was approached, the dilated pancreatic duct was visualized and transected about 0.5 cm away from the neoplasm. The distal end of the pancreatic duct were cut and frozen-section for pathological examination. If no carcinoma cells were detected, the posterior lateral wall of the descending segment of the duodenum and the ampullary segment were resected en block (Fig. 1).

Resection of lymph nodes

The hepatoduodenal ligament was skeletonized, while removal of the lymph nodes anterior and posterior

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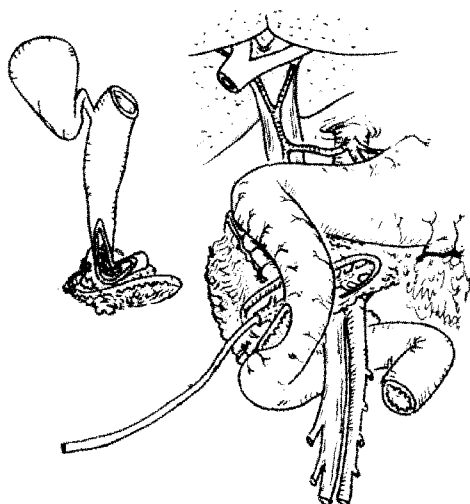


Fig. 1. En bloc resection of the biliary duct, ampullary vater, dilated pancreatic duct, and the posteroinferior wall of the descending duodenum.

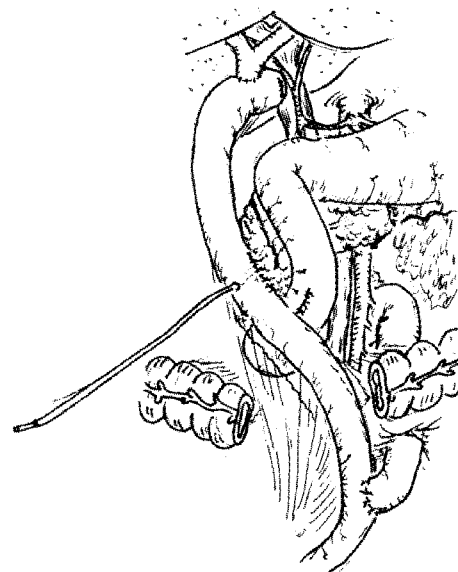


Fig. 3. Roux-en-Y choledocho-pancreato-jejunostomy.

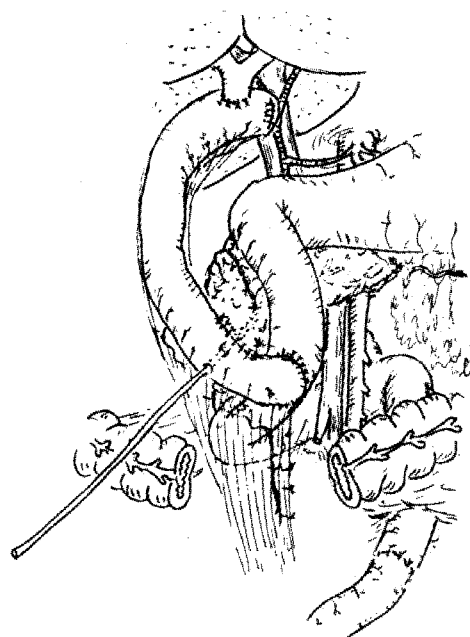


Fig. 2. Duodenal posteroinferior wall was closed after interposed jejunum hepatochoolangio-pancreato-duodenostomy.

to the pancreatoduodenum, along the hepatic artery and celiac artery, and between the IVC and aorta.

Reconstruction of the digestive tract

After the ampullary segment and the descending segment of the duodenum were resected, the defect of the duodenum was repaired. A catheter was immediately inserted into the pancreatic duct for drainage. Finally, interposed jejunum biliary-pancreato-duodenostomy or Roux-en-Y choledocho-pancreato-jejunostomy was performed (Figs. 2 and 3).

Results

Of the 8 patients receiving extended ampullectomy, 7 had papillary carcinoma of the ampullary segment and duodenum and 1 had congenital cystic dilatation of the common bile duct combined with malignant degeneration of the confluence of the pancreatic and bile ducts. Of the patients undergoing resection of the posteroinferior wall of the duodenum, 5 underwent interposed jejunum biliary-pancreato-duodenostomy, 2 Roux-en-Y choledocho-pancreato-jejunostomy, and 1 interposed jejunum biliary-pancreato-duodenostomy plus Roux-en-Y choledocho-pancreato-jejunostomy. The interposed jejunum biliary-pancreato-distal end of duodenostomy was combined with Roux-en-Y proximal end of duodeno-jejunostomy. One patient undergoing interposed jejunum choledocho-pancreato-duodenostomy died of gastrointestinal bleeding 4 days after operation. Another patient who had undergone Roux-en-Y choledocho-pancreato-jejunostomy suffered from intestinal obstruction because of compression of subphrenic abscess and recovered 20 days after removal of the mass. The remaining 6 patients recovered uneventfully without complications.

Pathologically, the stumps of the common bile and pancreatic ducts were negative in all the 8 patients, and lymph node metastasis occurred in the distal hepatoduodenal ligament and along the hepatic artery near the ampullary segment resected in 2 patients.

Follow-up of 7 patients showed a longest survival of 29 months (average 12 months). The 7 patients enjoyed a satisfactory life without any signs of relapse and metastasis after B-ultrasonography and CT examination.

Discussion

Anatomy of the ampullary segment and operative procedures^[9,10]

The standard operative procedures for carcinoma of the ampullary segment is pancreatoduodenectomy,^[11-13] which is based on the following factors: (1) there is no connective tissue between the duodenum and the head of the pancreas, which are difficult to separate; (2) there is a common blood supply from the anterior and posterior arcades of the pancreaticoduodenal artery to support the head of the pancreas and duodenum; (3) the distal end of the common bile duct and the main pancreatic duct combine to form the ampullary segment at the confluence of the head of the pancreas and duodenum, and an opening to the duodenal papilla.^[14,15] These structures enable the head of the pancreas, duodenum and the distal end of the common bile duct to form an individualized anatomic unit suitable for pancreatoduodenectomy.^[16,17]

First, we conclude that although there is no connective tissue in the pancreatoduodenal area, the head of the pancreas and the anterior and posterior walls of the duodenum are supported separately by branches of the comb artery rising from the anteroposterior of the pancreaticoduodenal artery, which communicate with each other via collaterals. Hence, excision of part of the anterior or posterior walls of the duodenum can not cause ischemia of the remnant duodenum. Second, the duodenal papilla and the ampullary segment are located in the posteroinferior area of the descending duodenum, which is supported by the posterior arcades of the pancreaticoduodenal artery. To excise the duodenal papilla only induces damage to part of the posterior arcades or comb branch. The existence of the anterior arcades and anterior comb branches does not cause ischemia and necrosis of the duodenum. Third, the superoposterior artery of the pancreaticoduodenum go parallelly with the bile duct groove in the head of the pancreas; being closer to the pancreaticoduodenal groove and the former runs into the pancreatic parenchyma from the superoposterior portion of the head of the pancreas. Hence it is unlikely damaged when separating the common bile duct behind the pancreas. Fourth, pathologically the biological characteristics of the ampullary segment are different from those of cancer of the pancreas and bile duct.^[12,19,20] The prognosis of the former is better than the latter.^[21] We thus consider that extended local resection is reasonable for the treatment of periampullary carcinoma of vater.^[18,23,30]

Scope of lymph nodes resection

According to the general rules issued by the Japanese Society of Cancer Surgery,^[16] the first station of carcinoma of the distal common bile duct includes superiorinferior lymph nodes along the hepatoduodenal ligament, and the second station comprises the lymph nodes

along the hepatic artery, and the lymph nodes around the posteroanterior area of the pancreatic head.^[22] For ampullary carcinoma, the first station includes the lymph nodes of posteroanterior portion of the head of the pancreas, whereas the second station consists of the lymph nodes along the hepatic artery, hepatoduodenal ligament and the root of the superior mesenteric artery.^[6] In our group, lymph node metastasis was only seen in the distal hepatoduodenal ligament or along the hepatic artery. Thus radical resection can be obtained if regional lymph nodes are removed with negative pathological results.^[23,30]

Anatomically, en block resection of ampullary carcinoma meets the principles of tumor treatment. Compared with pancreatoduodenectomy,^[26-28] it is intended to decrease the excision of normal tissues with minimal damage to the patient. Some complications still exist, but they can be eradicated with the improvement of operative skills.

Modified procedures

The procedure is indicated for ampullary carcinoma and carcinoma of the duodenal papilla, which are not infiltrated through the walls of the duodenum.^[24,29] Palpation is difficult to define whether the lesion is located in the head of the pancreas, the bile duct or the ampullary vater.^[25] If the lesion is not localized while turning over the pancreatoduodenum, the groove could be incised to display the distal end of the common bile duct for the judgement of the relationship of the lesion and its nearby tissue. Examination of frozen sections of resected specimens during the operation could help to select operative procedures.^[7,28]

When the ampullary segment was freed and the dilated pancreatic duct was cut, a catheter must be inserted into its lumen as a support for pancreato-intestinal anastomosis. After resection of the posteroinferior wall of the duodenum, the wound was closed without anastomosis to the jejunum.

At the time of side-to-end anastomosis of the pancreas and jejunum, the suture should not be placed beyond the anterior wall of the groove of the pancreatoduodenum, avoiding the ligation of the anterior artery arcade of the pancreatoduodenum. In this group, one patient who had had circumferential necrosis of the duodenum underwent interposed jejunum biliary-pancreato-distal end of duodenostomy plus Roux-en-Y proximal end duodeno-jejunosomy after partial excision of the necrosed duodenum.

In conclusion, perfect surgical skills, adequate knowledge about local anatomy, and subhepatic drainage are important for a decrease of postoperative complications.

Competing interest

The author or authors do not choose to response to the statements

listed in Instructions for Authors.

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