



Modified total meso-pancreatoduodenum excision with pancreaticoduodenectomy as a mesopancreatic plane surgery in borderline resectable pancreatic cancer

Y. Kawabata ^{a,*}, T. Tanaka ^a, N. Ishikawa ^b, H. Hayashi ^a, Y. Tajima ^a

^a Department of Digestive and General Surgery, Shimane University Faculty of Medicine, 89-1 Enyacho, Izumo, Shimane, 693-8501, Japan

^b Department of Organ Pathology, Shimane University Faculty of Medicine, 89-1 Enyacho, Izumo, Shimane, 693-8501, Japan

Accepted 12 February 2016
Available online 10 March 2016

Abstract

Background: A superior mesenteric artery (SMA)-first approach has been considered to be an efficient technique in pancreaticoduodenectomy when the SMA is a factor of borderline resectable pancreatic head cancer (BRPHC). However, this excellent procedure has limitations in terms of tumor resection with an intact coverage including the pancreatic tumor and the tumor-draining lymphovascular systems and the ability to achieve a complete regional lymphadenectomy.

Methods: A modified mesenteric plane procedure has been developed that provides improved regional lymphadenectomy and permits adjustment of the surgical approach, which is based on the direction of the tumor infiltration.

Results: Of 55 patients taken to surgery, 19 had peritoneal dissemination and/or liver metastasis at staging laparoscopy, and the procedure revealed tumor infiltration to the SMA and/or hepatic artery (HA) in 4 patients. Finally, 32 patients with BRPHC have undergone the procedure between April 2009 and June 2015. Twenty-four of 32 patients (75.0%) had negative resection margins, and the median number of lymph nodes harvested was 34. Lymph nodes around the SMA tested positive for metastasis in 13 patients (40.6%), and those around the HA tested positive for metastasis in 7 patients (21.9%). Complications occurred in 14 patients (43.7%), with no perioperative mortality. Overall survival rates were 65.3% at 1 year and 35.2% at 3 years.

Conclusions: Short-term results with the procedure may encourage surgical management for BRPHC.

© 2016 Elsevier Ltd. All rights reserved.

Keywords: Borderline resectable pancreatic cancer; Meso-pancreatoduodenum; Artery-first approach; Mesopancreatic plane surgery; Pancreaticoduodenectomy

Introduction

The primary goal of pancreatic cancer surgery is complete tumor removal with negative resection margins and adequate clearance of the regional lymph nodes.^{1,2} Borderline resectable pancreatic cancer involving the mesenterico-portal or arterial axis, a subgroup of uneasy pancreatic cancer, is an intermediate stage between straightforwardly resectable and technically unresectable disease.^{3,4} Early retropancreatic dissection of the superior mesenteric artery (SMA) from behind the pancreatic head area utilizing an

SMA-first approach has been devised to achieve a complete tumor resection for pancreatic head cancer,^{5–8} and it has been considered to be a safe and efficient technique in pancreaticoduodenectomy when the SMA is a factor of borderline resectability.^{5–7} To work toward the only potential cure, surgical resection with an intact coverage not only of the pancreatic tumor but also of the tumor-draining lymphovascular systems, including venous blood vessels, lymphatic vessels, and surrounding fat tissue, as well as regional lymph nodes,⁹ is strongly desired in pancreatic head cancer, particularly when borderline resectable disease is suspected.

* Corresponding author. Tel.: +81 853 20 2232; fax: +81 853 20 2229.
E-mail address: batayan5@med.shimane-u.ac.jp (Y. Kawabata).

In the field of colorectal cancer surgery, the introduction of mesocolic plane surgery, such as total mesorectal excision or complete mesocolic excision with central vascular ligation, has been shown to significantly improve outcomes.^{10–14} The mesorectum and mesocolon, embryological tissue planes, contain the blood vessels, lymphatic vessels, nerves, and often lymph nodes through which the tumor may disseminate.^{15–18} These surgical procedures include the concept of meticulous mesenteric plane surgery with central vascular ligation, i.e., a complete removal of the tumor with an intact peritoneal and fascial-lined package of mesentery containing all potential routes of metastatic tumor spread.^{10–16}

In pancreatic surgery, we have developed an artery-first approach, i.e., a total meso-pancreatoduodenum excision with pancreaticoduodenectomy (tMPDe), which provides a high rate of tumor-free resection with sufficient regional lymphadenectomy for resectable pancreatic cancer.^{7,19,20} In this study, we present a tMPDe with a supplying-vessels-first approach as a modified tMPDe technique (*m*-tMPDe) to achieve complete tumor resection in borderline resectable cancers of the head of the pancreas.

Methods

Study patients

Between April 2009 and June 2015, *m*-tMPDe was planned for 55 patients with borderline resectable cancer of the head of the pancreas in our institute. Preoperative assessment of the resectability of the pancreatic tumor was based on multidetector contrast-enhanced computed tomography (CT), a magnetic resonance imaging (MRI) study, endoscopic ultrasonography (EUS), and/or a positron emission tomography (PET) scan in each patient. Our Institutional Review Board approved this retrospective study.

Definition of borderline resectable pancreatic head cancer

After the completion of preoperative imaging studies, we defined patients as having borderline resectable pancreatic cancer based on the M.D. Anderson Cancer Center (MDACC) classification²¹ and the National Comprehensive Cancer Network (NCCN) guidelines.³ The criteria for borderline resectable pancreatic head cancer in this study were as follows: (1) distortion of the superior mesenteric vein (SMV)/portal venous axis, including short-segment venous occlusion with sufficient proximal and distal vessel length to allow safe reconstruction; (2) tumor abutment of the hepatic artery (HA) without extension to the celiac axis; and (3) tumor abutment of the SMA to no more than 180 ° of the circumference of the vessel wall (Fig. 1). All cases were discussed and managed by a multidisciplinary team in our institution.

Surgical technique

The basic principle of *m*-tMPDe for pancreatic cancer is en bloc resection of the primary tumor and regional lymph nodes through complete excision of the mesopancreatic plane, utilizing the artery-first approach. The mesopancreatic plane is the package of the pancreas head, the uncinate process of the pancreas, and the meso-pancreatoduodenum, which includes all tumor-draining lymphovascular systems. We defined this domain as the pancreaticoduodenal complex, which enables a rational en bloc pancreas head resection. Moreover, the pancreaticoduodenal complex has two major supplying vascular bundles, the gastroduodenal artery (GDA) and the first jejunal artery (FJA), that play a critical role in the blood supply and lymphovascular drainage. The GDA, which is the branch of the hepatic artery (HA), dominates the anterosuperior aspect of the pancreaticoduodenal complex. The FJA, which is the branch of the SMA and usually branches the inferior pancreaticoduodenal artery (IPDA), dominates the posterior aspect of the pancreaticoduodenal complex and runs toward the duodenum and proximal jejunum.⁷ Moreover, pancreas head cancer has two infiltrating directions, the HA and SMA (Fig. 2). In borderline resectable pancreatic head cancer management, the HA-first or SMA-first approach should be designed as a first step of the operation to judge resectability when the involvement of these major vessels is suspected based on preoperative imaging studies (Figs. 3 and 4).

The surgical procedure starts with a staging laparoscopy to rule out peritoneal dissemination or liver metastasis. After making an upper midline laparotomy incision, the artery-first approach should be conducted on or around the SMA when tumor involvement of the SMA is suspected. The retroperitoneum is opened at the left side of the duodenojejunal flexure, and the pancreas together with the SMA is mobilized so that the anterior surface of the aorta, the inferior vena cava, and the left renal vein are completely exposed in an effort to secure the posterior surgical margin. An interaortocaval lymph node sampling is routinely performed in our procedure. If interaortocaval lymph node metastasis is confirmed in the frozen section, the operative procedure is terminated at that point. To identify the SMA, we lift the transvers mesocolon toward the cranial side and stretch the upper jejunal mesentery to the left caudal side of the patient and then trace the middle colic artery (MCA) and FJA to the SMA (Fig. 4). The left semicircle dissection of soft connective tissue around the SMA, including lymph nodes, is carried out from the origin of the MCA up to that of the SMA. Although a complete dissection of the nerve plexus around the SMA can be done, we should preserve the nerve plexus at the left aspect of the SMA as much as possible under the strict guidance of frozen section analysis for the prevention of postoperative persistent diarrhea.²² The left semicircle dissection advances to the left lateral and left posterior aspects of the SMA. To facilitate this step, we expose the anterior aspect of the SMV widely in a sideways direction at the

Download English Version:

<https://daneshyari.com/en/article/6191257>

Download Persian Version:

<https://daneshyari.com/article/6191257>

[Daneshyari.com](https://daneshyari.com)