

Simultaneous laparoscopic biliary and retrocolic gastric bypass in patients with unresectable carcinoma of the pancreas

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Received: 17 December 1998/Accepted: 13 May 1999

Abstract

Background: A substantial number of patients with unresectable pancreatic cancer eventually develop biliary or gastric outlet obstruction. In some cases, they present initially with both complications. These conditions contribute markedly to their discomfort and certainly justify palliative intervention. The purpose of this study was to examine the feasibility and safety of simultaneous laparoscopic biliary and gastric bypass in patients with unresectable carcinoma of the pancreas.

Methods: Between August 1995 and July 1998, simultaneous laparoscopic biliary and retrocolic gastric bypass was performed successfully in 12 consecutive patients with unresectable carcinoma of the pancreas. There were eight men and four women. Their median age was 72 years (range, 50–82). In all patients, the indications for gastrointestinal bypass were gastric outlet obstruction and obstructive jaundice. The following parameters were evaluated for each patient: procedure-related morbidity and mortality, operative time, length of hospital stay, overall survival, and ability to sustain oral nutrition during the survival period.

Results: All procedures were completed laparoscopically. The mean operative time was 89 ± 29.56 min. There were no intraoperative complications. Postoperative morbidity consisted of wound infection in two patients and pneumonia in one patient. One patient died of multiorgan failure on postoperative day 2. The mean hospital stay was 6.4 ± 1.5 days (range, 5–17). The mean survival time until death from underlying disease was 85 ± 32.46 days (range, 31–260). None of the patients had recurrent jaundice, and all of them were able to maintain oral nutrition.

Conclusion: Simultaneous laparoscopic biliary and retrocolic gastric bypass is a safe and effective technique for the treatment of biliary and gastroduodenal obstruction in patients with unresectable pancreatic cancer.

Key words: Laparoscopy — Laparoscopic bypass — Palliation — Biliary bypass — Gastric bypass — Cancer — Pancreas

Surgical resection remains the treatment of choice for pancreatic cancer. However, <20% of patients are found to have resectable disease because of locally advanced cancer or metastasis at the time of operation. Pancreatic cancer arises in the head, neck, or uncinate process in 70–85% of cases. The most common presenting symptom is obstructive jaundice [8]. Further duodenal obstruction is a well-recognized but unusual complication that occurs in <5% of patients at initial presentation [9]. However, some abnormality on upper gastrointestinal series is seen in 35–56% of patients presenting with unresectable pancreatic cancer [2].

Radiological intervention and surgery are effective alternatives that offer good control of the disease until death. Open surgery has been associated with a high mortality rate (8–33%) and a morbidity rate of 20–60% [8–10]. Although, endoscopic and percutaneous interventions have a low mortality rate, numerous complications associated with recurrent obstruction may occur [1, 2].

The use of biliary stenting offers additional minimally invasive palliation for malignant bile duct strictures; in these cases, expanding metal stents are preferred to plastic stents. The main drawback to these methods is the substantial occlusion of these stents by tumor ingrowth [4]. Duodenal stenting is usually not considered an option for the treatment of severe duodenal obstruction in patients with invasive carcinoma of the pancreas [15]. Therefore, for patients with duodenal obstruction who require operation, surgical biliary bypass is a rational option. Although laparoscopic surgery for malignant disease with curative intent is still controversial, palliative laparoscopic procedures offer a minimally invasive method of managing these patients, with the potential benefit of not impairing the quality of life until death occurs from the underlying disease.

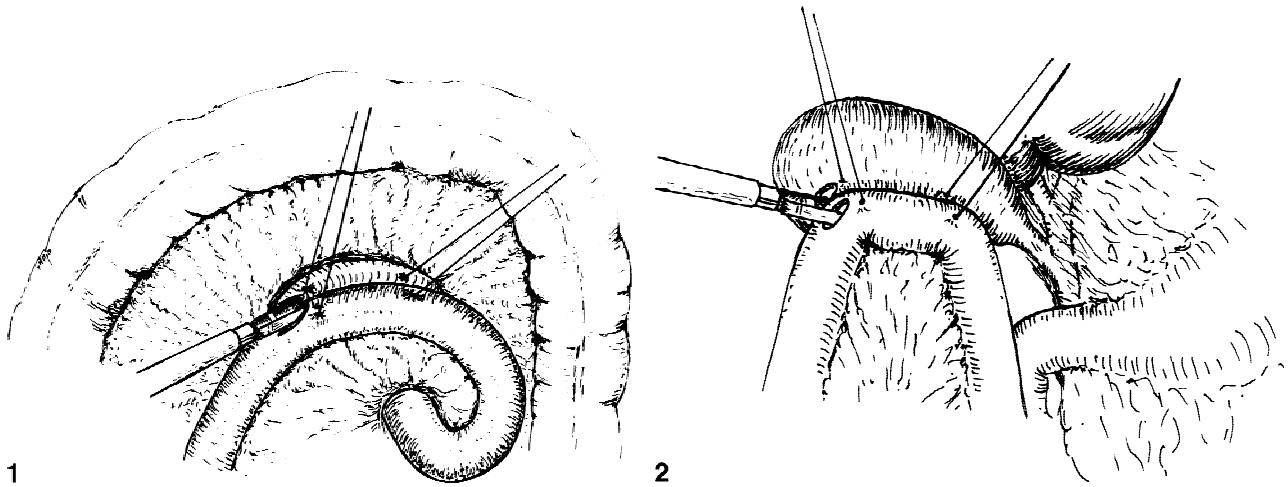


Fig. 1. Postero-inferior margin of the greater curvature of the stomach brought through the mesocolon and apposed to a 10-cm loop of jejunum located 20 cm distal to the ligament of Treitz by using two transabdominal stay sutures.

Fig. 2. Same technique used for the cholecystojejunostomy, where one application of the 30-mm Endo-GIA provided a sufficiently wide anastomosis.

Therefore, we set out to examine the feasibility and safety of simultaneous laparoscopic biliary and gastric bypass for the palliation of unresectable carcinoma of the pancreas.

Patients and methods

Between August 1995 and July 1998, simultaneous laparoscopic biliary and retrocolic gastric bypass was attempted in 12 consecutive patients. There were eight men and four women. Their median age was 72.41 ± 6.45 years (range, 59–82). In all patients, the indications for gastrointestinal bypass at initial presentation were gastric outlet obstruction and jaundice due to unresectable carcinoma of the pancreas. Irresectability of the pancreatic tumors was assessed by CT, MRI, endoscopic ultrasound, and angiography, which revealed features indicating nonresectability, such as extraperipancreatic vascular invasion and portal and/or mesenteric vein invasion. Furthermore, these imaging modalities did not reveal any signs of peritoneal and liver metastasis. Impaired gastric emptying was ascertained clinically as well as radiologically and/or by endoscopy. All patients received perioperative antibiotics.

The following parameters were evaluated for each patient: procedure-related morbidity and mortality, operative time, length of hospital stay, overall survival, and ability to sustain oral nutrition during the survival period.

The group values are expressed as mean \pm SD (range).

Operative technique

The patient was placed in a supine position. Once the pneumoperitoneum was established, a 10-mm telescope and two additional trocars were inserted under visual control. Laparoscopic gastrojejunostomy was performed as a retrocolic side-to-side anastomosis. The transverse colon and omentum were mobilized cephalic with the use of atraumatic graspers, and the duodenojejunal junction was identified. The posterior face of the stomach was exposed by incising the mesocolon near the ligament of Treitz. The postero-inferior margin of the greater curvature of the stomach was brought through the mesocolon and apposed to a 10-cm loop of jejunum located 20 cm distal to the ligament of Treitz by using two transabdominal stay sutures (Fig. 1).

While traction was maintained on the stays, the jaws of an Endo-GIA stapler (Auto Suture, Spain) were inserted into the enterotomies created by cauterizing scissors, and the anastomosis was created with two subsequent firings of a 30-mm stapler to ensure a sufficiently wide diameter of the gastroenterostomy. The enterotomies were closed using an additional 30-mm cartridge. The same technique was used for the cholecystojejunostomy, where one application of the 30-mm Endo-GIA provided a sufficiently wide anastomosis (Fig. 2). Adequate visualization of the distal

biliary tract, especially the cystic duct entrance, was established, and intraoperative cholangiography through the gallbladder was performed in all cases to exclude cystic invasion by the tumor.

Results

All procedures were completed laparoscopically. No intraoperative complications occurred. The mean operative time was 89.16 ± 29.56 min (range, 35–150). Postoperative morbidity consisted of wound infection in the umbilical trocar incision in two patients and fever at the 3rd postoperative day due to pneumonia in one patient. This complication responded satisfactorily to antibiotic treatment and physiotherapy. One patient developed bleeding 6 h postoperatively, manifested by transient hypotension and a decreased hematocrit. At explorative laparotomy, diffuse bleeding was found from the stapler line in the cholecystojejunostomy anastomosis. This patient, who suffered from the comorbid diseases of hepatic cirrhosis and severe cholestasis, died of multiorgan failure on postoperative day 2.

In 10 patients, liquid intake was started on the 3rd to 4th postoperative day and increased progressively to normal oral nutrition. Two patients developed delayed gastric emptying after the gastroenterostomy; oral intake was started on the 10th postoperative day. The mean hospital stay was 6.4 ± 1.5 days (range, 5–17).

The median survival was 85 ± 32.46 days (range, 31–260). All of the patients died without recurrent jaundice and were able to sustain oral nutrition for the total survival period.

Discussion

A substantial number of patients with pancreatic cancer will eventually suffer from biliary obstruction (75%) or gastric outlet obstruction (30–40%) before their death [5]. Palliative intervention is justified to relieve the clinical symptoms, with as little interference in the quality of life as possible. In recent decades, surgical palliation with bilioenteric bypass and gastroenterostomy has been the method of choice for patients presenting with both symptoms [15].

Although it provides satisfactory results, open gastroenterostomy has been associated with delayed gastric emptying in $\leq 16\%$ of cases [1, 10]; it also carries the risk and discomfort of laparotomy. In these debilitated patients, the operative mortality of this approach ranges between 8% and 17%, and the morbidity rate is $\sim 25\%$ [8, 9]. Certainly, if these bypasses could be achieved effectively by the laparoscopic approach, the potential benefit would include decreases in discomfort, morbidity, and hospital stay. Until the development of endoscopic stent techniques, surgical treatment of biliary obstruction with bilioenteric anastomosis was the only alternative. Postoperative mortality and morbidity after open biliary bypass reportedly range from 5% to 20% [2]. Other studies have reported a mortality rate of 27%, a procedure-related morbidity rate of 13%, and a re-intervention rate of 12% [1, 4].

Current opinion is divided regarding the preferred procedure. Cholecystojejunostomy is the simplest and fastest technique of internal biliary decompression. It requires minimal (if any) dissection of the gallbladder, the anastomosis is easily performed, and the operative time is short [11]. Some authors have found a lower operative mortality rate and a slightly greater incidence of subjective clinical improvement of jaundice after cholecystojejunostomy when compared with choledocal drainage [9, 11]. However, care must be taken to assure adequate decompression through the cystic duct even though the gallbladder may be distended [6, 12]. Therefore, cholangiography through the gallbladder is mandatory to exclude the invasion of the cystic junction by the tumor, in these circumstances creating a contraindication for cholecystojejunostomy.

The use of endoscopically placed retrograde stents—and more recently, of expanded metal stents—has offered a minimally invasive alternative to open surgical bypass [1, 3]. However, flexible endoscopy is not always successful [3], and the procedure is not without its own associated risks and morbidity [14], which may be poorly tolerated in this patient group; the procedure-related mortality rate ranges between 1% and 4% [1]. Another disadvantage to the use of stents is their short life patency. With stents, the recurrent jaundice rate ranges from 5% to 24% [2, 3], necessitating returns to the hospital for exchanges, often when the patients are in their sickest state. Thus, these hospital visits tend to impair their quality of life.

In an attempt to achieve optimal palliation with minimal discomfort and risk for the patient, we have adopted the strategy of submitting patients with unresectable carcinoma of pancreas, gastric outlet obstruction, and cholestasis to simultaneous bilioenteric and gastroenteric bypasses.

Our experience has shown that simultaneous laparoscopic biliary and retrocolic gastric bypass provides fast relief of both biliary and gastric outlet obstruction, while avoiding the discomfort of a laparotomy and obviating the potential inconvenience and discomfort of stent placement and exchange. The retrocolic gastric bypass was possible in all our patients. However, in advanced cancer of the head of the pancreas associated with distant tumor spread, retrocolic bypass is contraindicated. The follow-up showed that gastrointestinal and biliary passage remained unhampered for the rest of the survival period.

When patients present with two or more of the following factors—age < 60 years, hemoglobin levels < 11.5 g/100/ml,

absence of liver metastases, and expected survival of > 3 months—they have an associated risk of 25% to develop later gastric outlet obstruction, according to Meinken et al. [16]. In these patients, a complementary laparoscopic gastroenterostomy may be performed, regardless of whether they present initially clinical symptoms of gastric outlet obstruction or not, to prevent the future development of gastric obstruction. In our series, the mean survival time after both biliary and gastric bypasses was 85 days; however, five of our 12 patients survived 6, 7, 7, and 9 months, respectively.

Patients with extensive comorbid disease, portal hypertension, and coagulation disorders may not be suitable candidates for these laparoscopic procedures.

In conclusion, we found simultaneous laparoscopic biliary and retrocolic gastric bypass to be a safe and effective strategy for the palliation of pancreatic cancer, impairing the quality of life only to a minimal extent. Quality of life is of major importance since life expectancy is very short for these patients.

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