

Original Article

Effect of palliative bypass operation in the treatment of periampullary carcinoma of elderly patients

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Abstract: Objective: To explore the effect of palliative bypass operation in the treatment of periampullary carcinoma of elderly patients. Methods: 120 cases of patients with periampullary carcinoma treated with operation in our department from February 2013 to February 2015 were selected and divided into observation group (80 cases) and control group (40 cases) according to the random digital table method. The observation group was treated with palliative bypass surgery, and the control group was treated with radical resection. The mortalities, complications and survival rates in the two groups were observed. Results: The incidence of pancreatic fistula of the observation group was significantly lower than that of the control group (0% vs 32.5%, $P < 0.001$). The rates of bleeding, abdominal infection and pneumonia of the observation group after operation were 2.5%, 11.25% and 8.75% respectively, which were significantly lower than those 12.5%, 30% and 25% of the control group (all P s < 0.05). The hospitalization time of the observation group was significantly shorter than that of the control group ((18 ± 5.27) d vs (29 ± 15.08) d, $P < 0.001$). There was no difference in the incidence of complications between the two groups ($P > 0.05$). The 1-year, 2-year and 3-year survival rate of the observation group were 56.25%, 22.50%, 8.75% respectively, compared with 66.67%, 43.59%, 20.5% respectively of the control group, the differences were not statistically significant (all P s > 0.05). The average survival time of the observation group was significantly shorter than that of the control group ((12.98 ± 0.241) months, vs (14.95 ± 0.799) months, $t=15.234$, $P=0.000$). The differences of 1-year, 2-year and 3-year survival rate of periampullary carcinoma, pancreatic head carcinoma and pancreatic ductal adenocarcinoma between the observation group and the control group were not statistically significant (all P s > 0.05). Conclusion: Palliative bypass surgery can reduce the mortality and complications to a certain extent in the treatment of patients with periampullary carcinoma, which has little significance on improving the median survival rate.

Keywords: Palliative operation, periampullary carcinoma, elderly patients

Introduction

Periampullary carcinoma is a malignant tumor that occurred in duodenal papilla, head of pancreas, peri-ampulla, uncinata or distal common bile duct; it frequently occurs in older groups with difficulties in early stage diagnosis and late stage treatment; and the clinical symptoms are complex that extremely easy to be misdiagnosed [1]. At present, the treatment for periampullary carcinoma is mainly surgery, but the radical operation is difficult with high risk, and the incidence of postoperative recurrence, complication and mortality is very high, in addition, many patients already lost the timing of radical surgery after confirmed with periampul-

lary carcinoma, so, palliative surgical treatment is suggested by most clinical doctors. Palliative surgical treatment is aimed at reducing the phenomenon of bile duct and digestive tract obstruction, so as to improve the nutritional status and life quality of patients to prolong their life [2]. Palliative bypass surgery can not only reduce the obstruction of the digestive tract, but also has a significant effect on post-operative recovery of patients. In this study, in order to further analyze the effect of palliative bypass surgery in the treatment of periampullary carcinoma, we retrospectively analyzed 120 cases of patients with periampullary carcinoma, who underwent surgical treatment from

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February 2013 to February 2015, the report shows as follow.

Method

Basic data

120 patients with periampullary carcinoma treated with operation in our department from February 2013 to February 2015 were selected as the research object. All patients were confirmed with periampullary carcinoma by pathological examination, and treated without pre-operative biliary drainage. Among the total 120 patients, male patients of 65, female patients of 55, aged 65 to 87 with an average age (79.4 ± 3.5); tumor location: 78 cases of pancreatic head carcinoma, 32 cases of periampullary carcinoma (including 6 cases of duodenal carcinoma, 12 cases of ampullary carcinoma and 14 cases of distal common bile duct carcinoma), 10 cases of pancreatic ductal adenocarcinoma. The clinical manifestations included abdominal pain, fatigue, weight loss, jaundice, constipation/diarrhea, vomiting and nausea, ascites, mass, pain in back and waist and intestinal obstruction etc. According to different surgical methods, 40 patients of radical resection (pancreaticoduodenectomy) were identified as control group, in which 24 cases of male, and 16 cases of female; aged from 65 to 86 with average age (78.6 ± 3.4), tumor location: 23 cases of pancreatic head carcinoma, 13 cases of periampullary carcinoma (including 2 cases of duodenal carcinoma, 5 cases of ampullary carcinoma and 6 cases of distal common bile duct carcinoma), 4 cases of pancreatic ductal adenocarcinoma. 80 patients of palliative surgical treatment were identified as the observation group, in which 41 cases of male, 39 case of female; aged from 65 to 87 with average age (79.5 ± 3.6), tumor location: 55 cases of pancreatic head carcinoma, 19 cases of periampullary carcinoma (including 4 cases of duodenal carcinoma, 7 cases of ampullary carcinoma and 8 cases of distal common bile duct carcinoma), 6 cases of pancreatic ductal adenocarcinoma. The difference of the basic information in all patients had no statistical significance ($P > 0.05$), with good comparability. This study was approved by Ethics Committee, and all patients were informed and signed consent paper.

Inclusion criteria and exclusion criteria

Inclusion criteria for patients with palliative surgery: (1) age ≥ 65 years; (2) confirmed by clinical pathological diagnosis; (3) patients with multiple liver metastasis, extensive metastasis in abdominal area, local vascular invasion, or widespread retroperitoneal lymph node metastasis that couldn't be implemented with radical operation; (4) signed informed consent. Inclusion criteria for patients with radical operation: (1) age ≥ 65 years; (2) confirmed by clinical pathological diagnosis; (3) patients can take radical operation treatment. Exclusion criteria for both groups: (1) estimate survival time < 3 months; (2) patients could not cooperate with the treatment.

Operation method

Radical resection: 40 patients in control group underwent radical operation. Methods: en bloc resection of gallbladder and common bile duct following the common hepatic duct was performed, the distal gastrectomy cut 1/3-1/2 of the stomach; the proximal jejunum and duodenum, 10 cm under Treitz ligament, was removed in the duodenectomy. Retroperitoneal right renal hilus, pancreatic head, partial pancreas, the inferior vena cava, the pancreatic neck, the soft tissue and lymph nodes adjacent to abdominal aorta, the superior mesenteric vein and artery, portal vein, hepatic artery, the celiac artery trunk and related branches were skeletonized. The radical operation, which is pancreaticoduodenectomy, is mainly divided into standard resection of pancreas duodenum, radical resection of pancreas duodenum and extended resection of pancreas duodenum; operation mode was depend on the development of tumor. Radical pancreaticoduodenectomy was to clean the lymph nodes in the lesions, skeletonize the abdominal aorta, superior mesenteric artery, hepatic artery and celiac artery trunk, and clean the soft tissues and fascia in the front side of vena cava and abdominal aorta. The extended radical pancreaticoduodenectomy was based on the radical surgery to thoroughly clean the tissues in the intersection of aortic hiatus and common iliac artery. If the the metastasis invaded pancreas, the three types of surgery could be applied in combination, and remove the corresponding organ.

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Table 1. Comparison between the hospitalization time, mortalities and complications of the two groups (n (%))

Category	Palliative operation (N=80)	Radical resection (N=40)	χ^2/t	P
Death rate	0	1 (2.5%)	2.016	0.155
Postoperative bleeding	2 (2.5%)	5 (12.5%)	4.854	0.027
Biliary fistula	2 (2.5%)	3 (7.5%)	1.669	0.196
Abdominal infection	9 (11.25%)	12 (30%)	6.493	0.010
Pancreatic fistula	0	13 (32.5%)	29.158	0.0000
Wound infection	9 (11.25%)	7 (17.5%)	0.901	0.342
Pneumonia	7 (8.75%)	10 (25%)	5.791	0.016
Gastric emptying disorder	7 (8.75%)	2 (5%)	0.540	0.462
Heart diseases	4 (5%)	4 (10%)	1.071	0.300
Length of hospital stay	18 ± 5.27	29 ± 15.08	6.399	0.0000

Table 2. The survival rates of patients in two groups (n (%))

Group	Follow-up data	1-year survival rates	2-year survival rates	3-year survival rates
Observation group	80	48 (56.25%)	18 (22.50)	2 (8.75%)
Control group	39	26 (66.67%)	17 (43.59)	2 (20.5%)
χ^2	/	0.79	4.65	3.293
P	/	0.37	0.03	0.069

Palliative surgery method

Observation group underwent palliative surgery methods, which was mainly biliary drainage, pancreaticojejunostomy and biliary-enteric anastomosis. Pancreaticojejunostomy commonly uses four-point method to match the corresponding mucosa of pancreas duct and jejunum. Silicone tube was inserted into pancreas duct to support the internal drainage. Biliary-enteric anastomosis was closed by Coated Vicryl Plus Antibacterial Suture, and there was no drainage tube in common bile duct. Among the 80 patients in this group, there were 14 cases of single biliary drainage, 13 cases of Roux-en-Y choledochojejunostomy, 8 cases of gastrojejunostomy, 45 cases of Roux-en-Y choledochojejunostomy + gastrojejunostomy.

Postoperative treatment

The basic vital signs and drainage situation of two groups should be closely observed. Conservative treatment should be applied if the bleeding is mild. When conservative treatment failed or severe bleeding occurred in short term and lead to shock, a second surgery should be implemented in time to stop bleed-

ing, so as not to delay treatment.

Observation indexes and evaluation method

The occurrence of complications was observed in both groups. The postoperative mortality, postoperative hospitalization time and the complication occurrence rate were recorded. The 1-year, 2-years, and 3-year survival rate of two groups were analyzed.

Statistical data analysis methods

Data analyzes were performed using software SPSS11.0, the enumeration data and quantitative data were tested by χ^2 and t respectively. The quantitative data were presented by ($\bar{x} \pm S$), $P < 0.05$ indicates statistical significance.

Results

The operative mortality, postoperative hospitalization time and occurrence status of postoperative complications in two groups

The occurrence rate of pancreatic fistula was 0% in observation group, which was significantly lower than 32.5% in the control group, the difference was significant ($P < 0.001$); The bleeding rate, abdominal infection and pneumonia occurrence rates were 2.5%, 11.25% and 8.75% respectively in observation group, which were significantly lower than the 12.5%, 30% and 25% in the control group, the difference was significant ($P < 0.05$); Hospitalization time in observation group (18 ± 5.27) d was significantly shorter than that of control group (29 ± 15.08) d, the difference was significant ($P < 0.001$). There was no significant difference in the mortality, infection of biliary fistula, infection of wound, heart disease and gastric emptying disorder of two groups ($P > 0.05$), the specific data are shown in **Table 1**.

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Table 3. Survival rates of patients with different surgical sites (n (%))

Operation mode	Surgical sites	Follow-up data	1-year survival rates	2-year survival rates	3-year survival rates
Radical resection	Pot abdominal cancer	13	10 (76.92)	6 (46.15)	0 (0.0)
	Pancreatic head carcinoma	23	13 (56.52)	11 (47.83)	1 (4.35)
	Pancreatic ductal adenocarcinoma	4	3 (75.0)	1 (25.0)	0 (0.0)
Palliative operation	Pot abdominal cancer	19	13 (68.42)	6 (31.58)	0 (0.0)
	Pancreatic head carcinoma	55	33 (60.0)	10 (18.19)	1 (1.82)
	Pancreatic ductal adenocarcinoma	6	2 (33.33)	1 (16.67)	0 (0.0)

The comparison of survival rate and average survival time of two groups

The average survival time of patients in observation group was (12.98 ± 0.24) months, compared with (14.95 ± 0.799) months in control group, which was significantly lower than the control group ($t=15.234$, $P=0.000$). The 1-year, 2-year and 3-year survival rates of observation group were 56.25%, 22.50%, 8.75% respectively, compared with 66.67%, 43.59% and 20.5% in control group, there was no significant difference in survival rate ($P > 0.05$), the specific data are shown in **Table 2**.

Survival rate of the patients with different surgical site

Based on the survival rate analysis of patients with different surgical methods in same site, the comparison of the 1-year, 2-year and 3-year survival rate between palliative resection and radical resection in treating ampullary cancer, pancreatic head cancer and pancreatic ductal adenocarcinoma has shown that the difference was not statistically significant ($P > 0.05$), specific data are shown in **Table 3**.

Discussion

Periampullary carcinoma usually refers to the tumors within 2 cm of duodenal papilla, most of them are the malignant tumors occurred due to the lesion in papilla of ampulla, pancreatic duct epithelium, common bile duct in pancreas segment, duodenal mucosa and glands [3]. The common types include duodenal papilla carcinoma, pancreatic head cancer and distal bile duct cancer. In recent years, periampullary carcinoma incidence increased year by year in foreign countries, accounting for the top few in the digestive system cancers, and the mortality rate of periampullary carcinoma ranks No.4 in

malignant tumors [4, 5]. The early stage symptoms of Periampullary carcinoma are not very obvious; patients are always in the advanced stage while pathologically confirmed, most of them are old that couldn't bear radical surgery or even miss the radical surgery opportunity [6]. Currently, the main method in treating periampullary carcinoma is still radical resection, but the palliative bypass surgery is usually performed on the patients with massive tumor infiltration.

The principle of palliative operation is mainly to change the direction of bile and food through the reconstruction of digestive tract or bile duct. Palliative operation include transabdominal approach, percutaneous approach and endoscopic approach, among them, palliative operation by transabdominal approach includes open gastrointestinal bypass surgery and open bile duct bypass surgery; palliative operation by endoscopic approach includes bile duct bypass or gastrointestinal bypass surgery; percutaneous cholangical catheterized drainage is the main method of percutaneous approach of palliative operation. Research by Nieveen et al. [6-8] showed that increased bleeding occurred in and after radical surgery. It is high risk with high incidence of complications. There are some studies indicate [9], palliative bypass surgery has less complications, can significantly reduce postoperative mortality and complication rate, and it can also relief the clinical symptoms, prolong the survival time of patients. The results of this study show that no death occurred in the observation group within 1 months after surgery, and the incidence of complications such as pancrea fistula, postoperative bleeding, abdominal infection and pneumonia etc. were significantly lower than those in the control group ($P_s < 0.05$), the hospitalization time of the observation group was significantly shorter than that of the control

group ($P < 0.05$), and there was no significant difference in the incidence of death rate, biliary fistula infection, wound infection and gastric emptying dysfunction and heart disease etc. in both groups. The study result was consistent with the results of the relevant literatures [10, 11]. This is mainly due to surgical treatment often involves large blood vessels and important organs, radical surgery is very complex in procedures and techniques with many reconstruction of digestive tract anastomosis, there is a high demand of skills and psychological quality for the surgeon. However, palliative operation, which was carried out under the condition of reducing operative mortality and the incidence of complication, can relieve the clinical symptoms of patients, and to create the best condition for further treatment.

But recent studies [12-14] have shown that any surgical way to prolong the survival period of patients with periampullary carcinoma is very limited. KJ Labori et al. [15], put forward that extension of surgical resection can effectively improve the survival time of patients, however, the patients already had organ function damage, coagulation dysfunction and other problems in the operation, which not only increase the operation difficulty and risk, but also increase the mortality. Also, some scholars [16] think that palliative bypass surgery can effectively improve the survival rate of patients. And the results of this study show that 1-year, 2-year and 3-year survival rate, were 56.25%, 22.50% and 8.75% respectively, compared with 66.67%, 43.59% and 20.5% of control group, the difference has no statistical significance ($P > 0.05$), this may due to the severe condition of patients underwent palliative bypass surgery in this study.

There are researches [17, 18] proved that, with the improvement in the treatment technologies to periampulla carcinoma, radical surgery could be implemented on elderly patients, and confirmed that the different tumor site had a certain impact on prognosis, because if the tumor near the blood vessels, the masses can directly extrude or invade blood vessels, under this circumstance, extended resection could be implemented to effect a radical cure. Research has [19, 20] confirmed that the prognosis of radical surgery to pancreatic head cancer or periampullary carcinoma was poor. This study

shows, through the analysis on the survival rate of patients with different surgical procedures on same surgery site, the difference of 1-year, 2-year and 3-year survival rate of patients between observation group and control group had no statistically significant ($P > 0.05$), which was inconsistent with the literatures [21], this may be due to the severe condition of patients who underwent palliative bypass surgery. Prompt, in clinical treatment of patients with periampullary carcinoma, a most proper surgical method should be adopted according to the physical condition of patients combined with clinical staging and tumor site. For those patients who couldn't carry radical surgery, the palliative bypass surgery should be considered as far as possible to alleviate clinical symptoms, reduce mortality and complication occurrence, and prolong the survival period of patients, to create good conditions for next treatment. But for patients with periampullary carcinoma, it is difficult to determine what kind of operation mode is the best; the only way is to determine by the physical condition of patients combined with the experience of surgeon and many other factors.

In a word, palliative bypass surgery can decrease the incidence of mortality and complication occurrence of patients with periampullary carcinoma at a certain level; however, it doesn't have a significant role in improving the survival rate.

Declaration of conflict of interest

None.

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