Survival of Patients with Small Carcinomas of the Head of the Pancreas

Biliary-Intestinal Bypass vs. Pancreatoduodenectomy

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THE SPORADIC, albeit infrequent reports of patients with carcinoma of the head of the pancreas who have survived for long periods after palliative bypass and the low 5-year survival rates of patients undergoing pancreatoduodenectomy indicate the need to assess the true benefit of resection for this lesion. In the literature the average duration of survival after radical pancreatoduodenectomy has exceeded the survival reported following palliative bypass. This longer survival time is not a valid measure of the benefit of resection since pancreatoduodenectomy, as a rule, is reserved for the small, more favorable carcinomas of the head of the pancreas, whereas biliary-intestinal bypass is performed for those cancers too extensive to be resected. There is a need for the careful comparison of the results of these two operations when each is performed for only the *small* carcinomas of the pancreatic head.

Although within a short time after the reports of Whipple *et al.*[18] and Brunschwig [2] the university centers and large surgical clinics had adopted a policy of resection for small carcinomas of the head of the pancreas, on occasion a patient with such a tumor received a palliative bypass operation because of advanced age or poor general health. One study reported in a recent paper [14] describes 14 such patients who underwent palliative bypass for small cancers of the pancreas. However, in some communities where competent medical and surgical care and pathologic examination enabled early diagnosis of these tumors, a conservative policy of nonresection persisted. As this latter viewpoint had prevailed for some years in Duluth, Minnesota, it appeared that a control series might be available locally.

Submitted for publication May 1, 1967.

Materials and Methods

The hospital records of all patients with carcinoma of the pancreas admitted to St. Mary's or St. Luke's Hospital, Duluth, from 1957 to 1965, some 200 cases, have been reviewed. After study of the operative and pathologic reports, of subsequent readmission records, of office notes and necropsy protocols, a total of 23 patients with small resectable carcinomas of the head of the pancreas was selected for further analysis. Hepatic metastases were not found in any of these patients at the time of operation. None of these patients underwent resection.

The survival data for these patients was then compared with the length of palliation and survival for a group of 94 patients with small cancers of the head of the pancreas who did undergo pancreatoduodenectomy and whose records were previously studied and reported.[13]

Microscopic evidence of carcinoma was obtained either by biopsy at the original or subsequent laparotomy or by necropsy in 18 cases. These cases constitute Group I (Table 1). Group II is composed of five patients, who, by their clinical course, by the description of the surgeon, and by the subsequent discovery on physical examina-

TABLE 1. *Experience with Palliative Bypass for Resectable Lesions of the Head of the Pancreas*

	Group 1	Group 2	Total Group
Number of cases	18	5	23
Males	10	3	13
Females	8	2	10
Average age	66.0 yrs.	73.8 yrs	67.7 yrs.
Average duration of symptoms	3 mos.	8 mos.	4.0 mos.
Median duration of symptoms	2 mos.		2.5 mos.
Range of symptoms	1 wk.–1 yr.	1 wk.–1 yr.	1 wk.–1 yr.

tion of hepatic nodularity or cervical lymphadenopathy had virtually incontrovertible clinical evidence that the original mass in the head of the pancreas was malignant. When the two subgroups were compared there was little difference in the incidence of symptoms, physical findings, or duration of palliation. Therefore, the results are presented for the total group.

Results

Clinical Data. The 13 men and 10 women were an average age of 67.7 years. The median duration of the symptoms, which had been present in some patients for as long as a year, was 2.5 months; 83% of the patients had had symptoms for less than 5 months. The incidence of symptoms and physical findings is depicted in Tables 2, 3, and 4. Jaundice, weight loss, pain, and dyspepsia were the most common complaints. On physical examination half the patients had enlarged livers which may explain why an enlarged gallbladder could be palpated in only one-third. Four patients were emaciated.

The erythrocyte sedimentation rate was abnormally high in all patients, and mild anemia was found in half. In those patients who were jaundiced, the average direct serum bilirubin was 9.0 mg./100 ml. and the indirect 6.4 mg./100 ml. Only two patients had abnormal serum transaminase levels (SGOT), cephalin flocculation or thymol turbidity tests. Five patients who had urobilinogen concentrations measured in the feces had values indicating total biliary obstruction. In keeping with the selection of patients with only small resectable tumors, upper gastrointestinal roentgenograms were normal.

Surgical Operation. At laparotomy the gallbladder was dilated (Courvoisier's sign) in 14 of the 19 patients with jaundice, and the common bile duct was dilated in eight. The procedures performed for intestinal biliary bypass are shown in Table 5. In addition, gastrojejunostomy was performed in nine patients; in three at the original laparotomy and later in six who were reoperated upon because of duodenal obstruction.

Palliation and Survival. The duration of palliation was computed to extend from 1 month after operation, unless postoperative recovery required a longer interval, until discomfort first occurred. Although half of the patients obtained palliation for less than 5 months, the other half were comfortable for extended periods, lasting as long as 39 months (Table 6). The major recurrent distress for these patients was pain in 12, jaundice in four, gastrointestinal hemorrhage in four, and emesis unrelieved

TABLE 2. *Experience with Palliative Bypass For Resectable Lesions of the Head of the Pancreas*

Symptoms	Bypassed Series	Resected Series	Jordan's Total Series
Weight loss	74%	86%	96%
Jaundice	83	83	85
Pain	48	57	75
Painless jaundice	43	32	21
Pruritus	30	50	24
Dyspepsia	43	47	46

TABLE 3. *Experience with Palliative Bypass for Resectable Lesions of the Head of the Pancreas*

Symptoms	Bypassed Series	Resected Series	Jordan's Total Series
Anorexia	30%	47%	64%
Emesis	13	21	38
Diarrhea	22	36	18
Fatigue	30	36	36
Fever and chills	4	0	11
Diabetes	30	15	17

TABLE 4. *Experience with Palliative Bypass for Resectable Lesions of the Head of the Pancreas*

Physical Findings	Bypassed Series	Resected Series	Jordan's Total Series
Jaundice	83%	72%	87%
Hepatomegaly	52	47	83
Palpable GB	35	47	29
Tenderness	22	7	26
Mass	0	0	13
Ascites	0	0	14

by gastrojejunostomy in three. Marked sepsis occurred in two patients.

All 23 patients have died and the date of death is known for each. The length of survival ranged from two to 42 months and averaged a year. Half the patients lived 9 months or longer, and two patients lived longer than 2 years.

Discussion

It has been shown that when first seen patients with small resectable cancers of the head of the pancreas have, as a group, a lower incidence of anorexia, emesis, marked weight loss, abdominal pain, and pain in the back,[12] than does an unselected series of patients with tumors of various size, both small and extensive.[10] Tables 2 and 3 show that the patients with small tumors of the pancreatic head reported here, and who underwent biliary-intestinal bypass, had a similar low incidence of these same symptoms. On physical examination (Table 4), an abdominal mass or ascites was not present in either the bypassed or the resected series.

Five different forms of intestinal-biliary bypass were used in this group of cases. For fifteen patients the gallbladder was selected to decompress the biliary tract and it proved to be satisfactory for all. The common bile duct was successfully used for the others. Jejunostomy was favored in most cases because the anastomosis could often be more easily performed with the jejunum than with the duodenum, and because it was felt that recurrent obstruction due to extension of the tumor was less likely. In four patients icterus recurred late in the course of their disease due to extension of the primary carcinoma or due to metastasis to lymph nodes along the common bile duct.

Authors have differed in their opinions on the need of gastrojejunostomy. Cattell and Warren,[4] Pipes and Pareira,[15] and Poinot [16] have recommended routine gastrojejunostomy, whereas Buckwalter [3] and

TABLE 5. *Experience with Palliative Bypass for Resectable Lesions of the Head of the Pancreas*

Procedure Performed	Group I	Group II	Total Group
Biopsy only	2 patients	0 patients	2 patients
Cholecystoduodenostomy	7	1	8
Cholecystojejunostomy	4	2	6
Cholecystogastrostomy	1	0	1
Choledochoduodenostomy	3	2	5
Choledochojejunostomy	1	0	1
Gastrojejunostomy	7	2	9
Primary operation	2	1	3
Reoperation	5	1	6

Datsenko[7] performed the procedure in only 10% of their large series. Although only 10 to 20% of patients with cancer of the head of the pancreas develop obstruction of the duodenum, gastrojejunostomy should be performed if partial obstruction or gross invasion of the duodenum is found at operation. From experience with these 23 patients, it appears best also to perform gastroenterostomy for the patient in whom the carcinoma is small and a long survival is possible.

Although the length of survival after palliative biliary-intestinal bypass for unresectable carcinomas of the head of the pancreas averages only 5 to 7 months,[1, 3, 5-9] more favorable reports are seen infrequently.[16] These latter usually concern small groups of patients often with histologically unproven lesions. Jordan,[10] in 1960, found only four microscopically verified cases of carcinoma with survival for 5 years or longer without treatment of the primary tumor. One of these was a spontaneous remission, the only confirmed remission of pancreatic carcinoma. On reviewing the recent literature I found only 16 patients who survived longer than 2 years following palliative bypass, 11 patients who survived 3 years, three patients who survived longer than 4 years, and only two patients who survived 5 years. Glenn and Thorbjarnarson[8] in a series of 78 cases, and Bowden *et al.*[1] in a series of 108 reported that no patient survived more than 2 years. Buckwalter *et al.*,[9] Halpert *et al.*,[15] and McDermott and Bartlett[11] reported in three separate series which totaled 357 cases, only five patients who survived longer than 2 years, and four of these five were dead within 27 months.

In comparison, median survival time following radical pancreatoduodenal resection has been from 1 to 2 years although the great majority of patients succumbed within 3 years of operation.[13, 17] For a group of 94 patients undergoing pancreatoduodenectomy for carcinoma of the head of the pancreas, Mongé *et al.*,[13] reported that half survived for 12 months and were comfortable for at least 9 months. In several smaller series Cliffton,[5] Halpert *et al.*,[9] and Morris and Nardi[14] reported median survivals approaching 2 years. Figures 1 and 2 illustrate the palliation and survival curves for each operation when either is applied only to patients with small carcinomas. If patients dying from recurrent cancer are considered, comparing the curves shows that half of those undergoing resection are comfortable for 6 months longer, and one-fifth for a year or more longer than patients who had only palliative bypass. Thus, in addition to the 13 to 18% of patients who survive five years following resection, another 35% gain an extra year of life by having resection rather than bypass.

Summary

Twenty-three patients who had undergone palliative biliary-intestinal bypass for small carcinomas of the head of the pancreas were selected for study. Although none of these patients had undergone pancreatectomy, the tumors were deemed resectable in each. Symptoms and physical findings were similar to those in a group of patients who had radical pancreatoduodenectomy.

Half the patients were comfortable for 5 months following operation; the length of palliation averaged 8 months. Because

TABLE 6. *Experience with Palliative Bypass for Resectable Lesions of the Head of the Pancreas*

Results	Group I	Group II	Total Group
Palliation			
Range	1 to 39 mos.	2 to 14 mos.	1 to 39 mos.
Average	8.5	5.6	8.0
Median	5.0	5.0	5.0
Survival			
Range	2 to 42 mos.	6 to 11 mos.	2 to 42 mos.
Average	12.4	10.7	12.0
Median	10.0	7.0	9.0

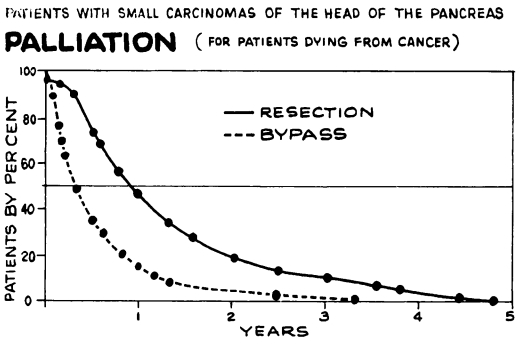

FIGURE 1.

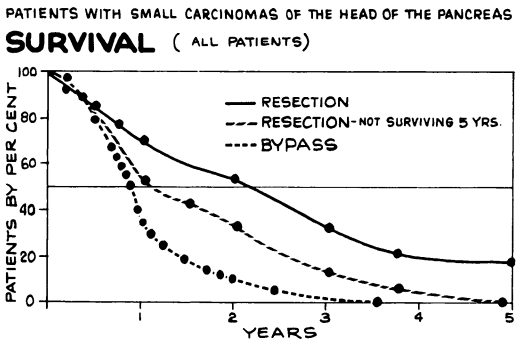

FIGURE 2.

of the need to reoperate upon six patients for duodenal obstruction, gastrojejunostomy is recommended when a long survival is anticipated.

All 23 patients died and the date of death is known for each. The longest survival was 42 months. Half the patients died within 9 months of operation, and the average survival time was 12 months.

Although the majority of patients with carcinoma of the head of the pancreas are best treated by a conservative surgical procedure, radical pancreatoduodenectomy remains the only potentially curative operation. In addition, for patients with small carcinomas of the head of the pancreas who were not cured by pancreatoduodenectomy, this operation provided longer palliative benefit as well as longer survival than has biliary-intestinal bypass.

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