

Chapter 28

**Tropical pancreatitis –
Surgical experience at Medical College,
Trivandrum**

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Summary

Objective: To evaluate the clinical presentations, the surgical management and its outcome in tropical pancreatitis (TP).

Material and methods: A retrospective cum prospective analysis of patients with tropical pancreatitis admitted to the Department of Surgical Gastroenterology, Medical College Hospital, Trivandrum (a tertiary level health facility in south Kerala) from January 1993 to September 2004 was carried out. There were 327 cases of tropical pancreatitis during this period. The disease accounted for 9.15% of admissions to the department. Median age of clinical presentation was 34 years (18-65 years). There was a sex predilection for males (M:F = 2.3:3). Of the 327 cases, 189 (57.8%) underwent surgical treatment. One hundred and four cases (55%) were diagnosed to have malignancy and 85 cases were benign on evaluation by various preoperative investigations. Seventy-eight percent had carcinoma of head and the rest of them had carcinoma of the tail of the pancreas. Out of the 81 carcinomas involving the head of pancreas, 32 cases (39.5%) were resectable and underwent pancreaticoduodenectomy. On the contrary, of the 23 cases of carcinoma body and tail of pancreas, only 4 (17.3%) were resectable. Palliative biliary bypass was done in 49 patients with unresectable carcinoma of the head, for relief of obstructive jaundice. Twenty-one cases of unresectable carcinomas underwent nerve ablation procedures for palliation of pain. Of the benign cases, 92% had chronic epigastric pain with radiation to back. The surgical procedures for benign disease were longitudinal pancreaticojejunostomies (LPJ) (70), distal pancreatectomies with splenectomy (9), Frey's procedure (5) and total pancreatectomy (1).

Results: Satisfactory pain relief was attained in 76% of cases of benign tropical pancreatitis. Recurrent pain was noticed in 21% with a latent period ranging from 6 months to 2 years. Incidence of malignancy among patients who underwent longitudinal pancreatico-jejunosotomy was 10% with an average latent period of 7 years. All of these were unresectable. Twenty five percent of the patients who underwent biliary bypass alone developed duodenal obstruction later (median interval 4 months) needing gastrojejunostomy.

Major morbidity rates after pancreaticoduodenectomy were pancreatic leak (6.2%) and delayed gastric emptying (18% after pylorus preserving pancreatoduodenectomies).

Mortality rates were 3.1%, 1.4% and 8% for pancreaticoduodenectomy, LPJ and palliative bypass respectively. Median survivals after resection were 22 months and 7 months for pancreatoduodenectomies and distal pancreatectomies respectively.

Conclusion: *Carcinoma in tropical pancreatitis has a predilection for the head of pancreas. Pancreaticoduodenectomy appears to improve the survival with acceptable morbidity and mortality rates. Recurrent malignancy after initial resection or bypass is a diagnostic dilemma and majority of these are un-resectable.*

Introduction

Tropical pancreatitis (TP) affects the young: disabling pain, diabetes and the disturbing thought of possible malignant change cripple them at the prime of life. There is definite evidence to suggest that TP is a premalignant condition. This study, from one of the largest tertiary care centers dealing with the disease in this part of the world, attempts to examine the presentations of the disease over the last decade and the outcome of surgical management.

Material and methods

Between January 1993 to September 2004, 327 patients with tropical pancreatitis were admitted to the Department of Surgical Gastroenterology, Medical College Hospital, Trivandrum. These patients were retrospectively analyzed using patient records, operation notes, pathology reports and other documents and also followed up prospectively. TP accounted for 9.15% of admissions to the department in comparison with alcoholic pancreatitis, which accounted for less than 1.5% of the admissions during this period. The median age of clinical presentation was 34 years (18-65 years). Males were affected more often than females (M:F - 2.3:3)

Chronic and recurrent episodes of epigastric pain brought majority of the patients to the clinic. Jaundice with pruritus was the presenting feature in majority of patients who had carcinoma head of pancreas with TP. Fifty eight percent of the TP patients were diabetic, whereas

73% of those with carcinoma in TP were diabetic. Loss of weight was another presenting symptom, which was contributed to by both uncontrolled diabetes and malignant change.

Out of a total of 327 patients, 189 (57.8%) underwent various surgical procedures. Carcinoma of the pancreas was diagnosed in 104 cases (55%) and 85 cases were diagnosed benign by preoperative investigations. Seventy-eight percent of patients had carcinoma in the head of the pancreas while in the rest it was in the body and tail. Out of the 81 carcinomas, 32 involving the head (39.5%) were resectable and underwent pancreaticoduodenectomy (Table 1.1). However, out of 23 cases of carcinoma body and tail of pancreas, only 4 (17.3%) were resectable.

Table 1.1: Region of involvement in relation to resectability

Region of involvement	Resectability	Total number
Head of pancreas	32 (39.5%)	81 (78%)
Neck and body of pancreas	2 (13.33%)	15 (14.4%)
Tail of pancreas	2 (25%)	8 (7.6%)

Palliative biliary bypass was done in 49 patients with unresectable carcinoma head of pancreas who presented with obstructive jaundice and intractable pruritus (Table 1.2). Twentyone patients of unresectable carcinomas underwent nerve ablation procedures and celiac ganglion block as palliation for pain.

Table 1.2: Operative procedures

	Sl. No.	Procedures	Total No.
Carcinoma in TP	1	Classical Whipple	10
	2	PPPD	22
	3	Distal pancreatectomy	4
	4	Palliative biliary drainage alone	28
	5	Biliary drainage + GJ	21
	6	Celiac ganglion block/nerve ablation	21
Benign TP	1	LPJ	70
	2	Distal pancreatectomy	9
	3	Frey's procedure	5
	4	Total pancreatectomy	1

Among the benign cases, majority presented with pancreatic pain. Acute presentations in TP can occur infrequently and is a challenge to the surgeon. Two patients presented with haemosuccus pancreaticus, 4 with necrotizing pancreatitis and 12 with pseudocysts (Table1.3).

Table 1.3: Acute presentations in TP

Presentation	No.	%
Pseudocyst	12	3.67
Necrotizing pancreatitis	4	1.2
Pancreatic ascites	3	0.9
Pancreatico-pleural fistula	2	0.6
Haemosuccus pancreaticus	2	0.6

Main pancreatic duct dilatation more than 12 mm by USG or CT scan was noticed in 71% of cases. The surgical procedures for benign disease involved 70 longitudinal pancreaticojejunostomies (Partington-Rochelle

modification of Peustow's procedure), 9 distal pancreatectomies with splenectomy, 5 Frey's procedures and one total pancreatectomy (Table 1.2).

Results

Satisfactory pain relief was attained in 76% of cases of benign tropical pancreatitis after surgery. Recurrent pain was noticed in 21% with a latent period ranging from 6 months to 2 years. Ten percent of those who underwent longitudinal pancreaticojejunostomy developed malignant change with an average latent period of 7 years (median age of occurrence 46 years), all of them had un-resectable disease on re-exploration. Local recurrence of carcinoma after pancreaticoduodenectomy was observed in 1 patient, 5 months after resection. Twenty five percent of the patients who underwent biliary bypass alone developed duodenal obstruction later (median interval - 4 months) needing gastrojejunostomy.

Table 1.4: Complications

Complication	Whipple	PPPD	LPJ	DP	Others	Total No. (%)
Postoperative bleeding	1	1	-	1	2	5 (2.64)
Biliary leak	-	1	-	-	-	1 (0.5)
Pancreatic leak	1 (10)	1 (4.5)	1	-	-	3 (1.5)
Delayed gastric emptying	1 (10)	4 (18)	-	-	-	5 (2.64)
Wound infection	1	2	2	1	5	11 (5.8)
Adhesive obstruction	-	1	3	1	2	7 (3.7)
Portal vein injury	-	1 (4.5)	-	-	-	1 (0.5)
Atelectasis/pneumonia	1	3	5	1	2	12 (6.3)

The morbidities of resection were postoperative bleeding (2.9%), pancreatic leak (6.2%) delayed gastric emptying (18% of pylorus preserving pancreatoduodenectomies), wound infection (5.8%), chest complications in the form of atelectasis or pneumonia (6.3%) and adhesive small bowel obstruction (3.7% -Table1.4)

Table 1.5: Mortality

Procedure	No. of in-hospital deaths	Percentage
Whipple's/PPPD	1	3.1
LPJ	1	1.4
DP	0	-
Others	4	8.16

Mortality rates were 3.1%, 1.4%, 0% and 8% for pancreaticoduodenectomy, LPJ, distal pancreatectomy and palliative bypass respectively (Table 1.5). Multifocal carcinoma was observed in 9% of resected specimens. Longest disease-free survival after Whipple's resection for TP is 6 years. Median survival after resection for carcinoma were 22 months and 7 months for pancreato-duodenectomies and distal pancreatectomies respectively.

Conclusion

Carcinoma in TP has a predilection for the head of pancreas. Multifocal malignancy occurs in 9% of cases. Radical resection appears to confer survival advantage with acceptable morbidity and mortality rates.

Discussion

Kerala has the highest incidence of TP in the world. These patients have coarse pancreatic calcifications as a hallmark of the chronic pancreatitis^{4,5}. Tropical pancreatitis occurs in young adults, with male-female ratio of approximately 1.6:1, but as high as 5:1 in some studies.

A number of etiological factors have been implicated. Exogenous toxins

like cyanogenic glycosides linamarin and lotaustralin are contained in cassava and depletion of methionine can cause pancreatitis. Protein calorie malnutrition and deficiency of micronutrients such as selenium, copper, and vitamin A have been implicated as other etiologic factors in TP. Familial clustering of TP has been reported. The role of cassava remains speculative, although a variety of dietary toxins and free radicals and genetic factors appear to be important considerations.

Most of the early TP patients were described as emaciated, "pot-bellied," and edematous with diabetes mellitus. In the early stages of TP, the pancreas may appear totally normal. Later, it becomes atrophic, firm and extremely fibrous. The islets of Langerhans may be spared even in the advanced stages of the disease. A pseudonesidioblastosis is often seen. Diabetic ketoacidosis is distinctly uncommon; however, the diabetes is quite brittle and difficult to control. Diabetes mellitus develops in most of the patients with TP before the age of 30. Pseudocysts are rare even with acute exacerbations and recurrent episodes of pancreatitis. Necrosis of pancreas during acute attack is a rare presentation.

Patients with fibrocalculous changes in the head of the pancreas may experience encasement of the distal bile duct with extrahepatic obstruction and obstructive jaundice. Development of obstructive jaundice, worsening of pain, deterioration of diabetic state and significant weight loss should alert the clinician to the possibility of cancer in TP, as in our experience more than 70% of patients with this combination proved to have carcinoma. Pancreatic exocrine function may be preserved until the very late stages of the TP and clinical steatorrhea is not common. Computed tomography (CT) scanning is very sensitive in diagnosis.

Many retrospective and prospective studies have reported a high association between TP and carcinoma of the pancreas. Previous reports claim that unlike in denovo ductal cancer, which has a distinct predilection for the head, cancer in TP occurs most frequently in the body and tail of the pancreas. However, in our series, 78% of carcinomas occurred in the head of pancreas, with common presenting symptoms of jaundice and pruritus. Earlier studies of surgical management of

carcinoma in TP have reported dismal results after resection and adjuvant therapy. However, current results from our center appear to give good survival advantage for malignancies of the head after resection, although that of body and tail continues to be poor.

Pain is the hallmark symptom of TP. The chronic, relapsing pain often is not controlled by narcotic analgesics. There are reports that octreotide and large doses of high -protease pancreatic enzymes are of significant value in control of pain.

Lateral pancreaticojejunostomy is the most commonly performed operation in patients with fibrostenotic TP. The group with benign TP who underwent LPJ, of whom about 70% had a ductal dilatation more than 12 mm, had effective drainage with symptomatic relief. Do stone clearance and duct enterostomy protect the patient with TP from malignancy? No literature is available on this. There are anecdotal reports of carcinoma occurring several years after a pancreatic drainage procedure. Seventy percent of patients with TP had pain relief after surgery on a ten year follow up. Despite drainage procedures, 10% of cases presented later with inoperable carcinoma of pancreas. The average age for pancreatic cancer onset was 46 years with an average latent period of 7 years, in our series.

In our center, pancreaticoduodenectomy and distal pancreatectomy are the procedures adopted for obvious carcinoma in TP, or in case of a head mass with a strong suspicion of malignancy clinically or radiologically.

Nerve ablation procedures such as celiac ganglion block and splanchnicectomy have been used in the management of malignant pain.

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