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Ninety-five Per Cent Distal Pancreatectomy for Chronic Pancreatitis *

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A WIDE variety of surgical operations have been proposed for the cure of patients with chronic pancreatitis.^{1, 2, 4, 5} The very number and complexity of these procedures attests that an ideal treatment of this disease has not yet been devised. In the majority of patients with recurrent pancreatitis its etiology is unknown although a high incidence of *alcoholism and narcotic addiction* is regularly recognized. Occasionally pancreatitis is associated with *biliary calculi*. Under these circumstances cholecystectomy and, if necessary, choledocholithotomy usually frees these individuals from their repeated attacks of pancreatic pain. Nevertheless, even after correction of biliary tract disease, a few patients continue to have episodes of pancreatic inflammation. Infrequently severe upper *abdominal trauma* is the cause of pancreatitis.

Patients classified in these three general groups constitute the basis of this report.

One concept of patients suffering from recurring pancreatitis is generally accepted; if the pancreas, or a very large part of it, is removed, they no longer suffer from their disease. In the past several actual, as well as a number of theoretical, hazards have been recognized as potential concomitants of attempting to achieve relief from pancreatitis by some form of total or near total pancreatectomy. Among these *risks* are: the mortality of the operation itself, endocrine and exocrine complications of pancreatic ablation, lipemia secondary to loss of glucagon, unstable diabetes, duodenal necrosis, choledochojejunal stricture and technical difficulties actually preventing performance of the operation.

Early experience with total or subtotal pancreatectomy favored *pancreaticoduodenectomy* as performed for cancer of the

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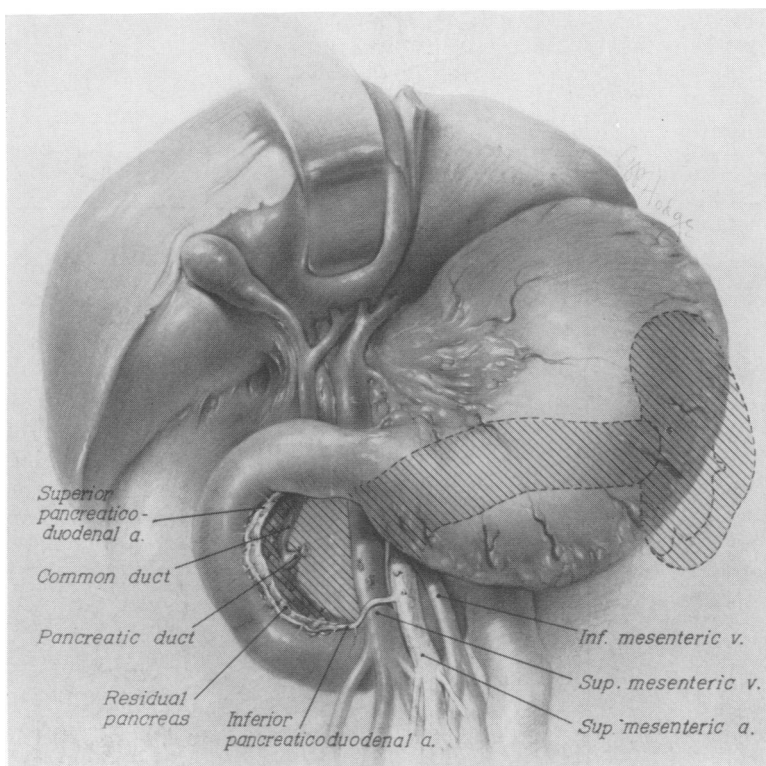


FIG. 1. Diagrammatic representation of 95% distal pancreaticoduodenectomy.

pancreas or of the ampulla of Vater.⁷ This operation, even when performed under ideal circumstances, has an appreciable mortality. Furthermore, it carries with it a significant number of serious postoperative complications such as massive hemorrhage, postoperative dumping syndrome, stricture at the site of choledochojejunal anastomosis, leaks of the pancreaticojejunostomy, as well as the more general difficulties attending any hazardous operation of comparable

magnitude. In addition, this operation removes the distal stomach, the entire duodenum and normal choledochoduodenal junction. Since these deprivations seemed unjustified for a noncancerous disease, we sought another solution to rid patients of a chronically inflamed pancreas. The operation reported here has been termed 95 per cent distal pancreatectomy. We recognize, of course, that under unusual circumstances pancreaticoduodenectomy may still be the operation of choice.

In 95 per cent pancreatectomy the spleen, the tail, the body and the uncinata process of the pancreas are removed completely. A small cuff of the head of the pancreas is preserved. This lines the lesser curvature of the duodenum and is estimated to be no more than 5 per cent of the entire gland. In addition to retaining some small portion of partially functioning pancreas, the cuff helps protect the superior and inferior pancreaticoduodenal arteries and the common

TABLE 1. Subtotal Pancreatectomy—Preoperative Symptoms and Clinical Features

	Number	%
1. Weight loss	25	100
2. Pain	25	100
3. Alcoholism	16	64
4. Previous operations	16	64
5. Diabetes	15	60
6. Biliary tract stones	5	20
7. Drug addiction	6	20
8. Previous trauma	3	12

TABLE 2. *Pancreaticoduodenectomy for Chronic Pancreatitis*

Patient Number	Alcohol	Narcotics	Follow Up
1.	+	+	Alive 4½ years, stricture of common duct—repaired
2.	0 traumatic	0	Alive 4 years, stricture of common duct—repaired
3.	+	+	Alive 4 years, hopeless narcotic addict
4.	+	+	Alive 4 years, well.
5.	0 traumatic	0	Operative death—septicemia.*

* Autopsy showed incidental reticulum cell sarcoma in the pancreas.

duct from injury during the course of operation. This small fragment of gland has not, as far as we can determine, been the site of recurring attacks of pancreatitis, nor has it been the site of persistent pancreatic fistula. The scope of this operation is portrayed diagrammatically in Figure 1.

Clinical Material

In the past decade, 25 patients with pancreatitis have undergone subtotal pancreatectomy. Their general clinical features are classical (Table 1). In five, pancreaticoduodenectomy had to be performed because 95 per cent pancreatectomy was technically impossible due to massive involvement of the duodenum in the inflammatory process: alcoholism and narcotic addiction was present in three, trauma was the cause of the disease in one while trauma and unsuspected lymphosarcoma were present in another (Table 2). This last patient died postoperatively. Obstruction at the site of the choledochojejunal anastomosis occurred in two of the four surviving patients. Although both of these strictures were successfully repaired at a second operation, this complication emphasizes the difficulties encountered in fashioning a serviceable anastomosis between a common duct of normal size and a loop of jejunum.

Twenty patients have been subjected to 95 per cent distal pancreatectomy (Table 3). All suffered from severe bouts of pan-

creatic pain and all sustained serious losses of weight. Most of them reflected partial destruction of exocrine and endocrine pancreatic function. Twenty per cent were narcotic addicts and 65 per cent had had one or more unsuccessful operations directed at relieving them of their intolerable attacks of pain.

Results of Operation in 20 Patients

Of the twenty patients undergoing 95 per cent pancreatectomy, 13 are classified as having an excellent result (Table 4). They

TABLE 3. *95% Distal Pancreatectomy for Chronic Pancreatitis*

Patient Number	Alcohol	Narcotics for Relief of Pain	Follow Up (years)	Result
1	0	0	10	Excellent
2	+	0	6	Excellent
3	0	+	6	Excellent
4	+	+	5	Excellent
5	+	+	5*	Poor
6	+	+	4	Good
7	+	0	3	Excellent
8	+	+	2	Excellent
9	0	0	2	Excellent
10	+	+	2**	Good
11	+	+	2	Good
12	+	+	2	Excellent
13	+	+	1	Good
14	+	+	½	Excellent
15	+	+	½	Poor***
16	+	0	½	Excellent
17	0	0	½	Excellent
18	+	0	½	Good
19	+	0	½	Excellent
20	+	+	½	Excellent

* Death 5 years postoperatively—fractured hip and pneumonia.

** Death 2 years postoperatively—carcinoma of breast.

*** Incomplete operation.

TABLE 4. *Clinical Results of 96% Distal Pancreatectomy*

Excellent	Good	Poor	Operative Deaths	Late Deaths
13 (65%)	5 (25%)	2 (10%)	(0%)	2* (10%)

* One death secondary to alcoholism and malnutrition 5 years postoperatively.
One death secondary to metastatic carcinoma of the breast.

are free of pain, have regained their normal weight, and have returned to useful occupations. One patient died of breast cancer 2 years after pancreatectomy. Prior to her demise she was completely free of symptoms of pancreatitis.

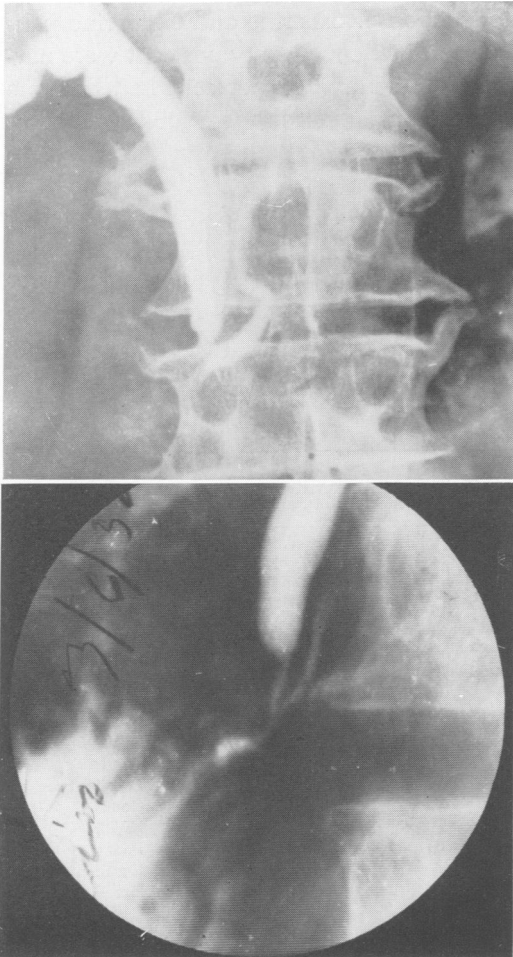


FIG. 2. Unretouched roentgenograms of pancreatic ductal obstruction. These films were obtained during cholangiography employing hypopaque and morphine.

Five patients have been designated as having acquired a good operative result. They, too, are free of pain and have gained some weight, but for one reason or another have not returned to work. Two are severe narcotic addicts. When hospitalized and freed of their addiction they are without symptoms of pancreatic disease and appear to be useful citizens. On discharge from the hospital, however, they promptly resume their addiction. One patient's persistent alcoholism prevents employment. One patient is hospitalized with moderately advanced pulmonary tuberculosis, while in another, a severe neurosis and dependent personality prevents employment.

Two patients are classified as poor results. One was a severe alcoholic who refused to take his insulin regularly and neglected his exogenous pancreatic extract. He died 5 years after pancreatectomy of pneumonia, complicating a fractured hip. The other poor result was obtained in a patient whose head and uncinata process seemed free of disease at operation. These portions of the pancreas were left in place and she was well for 6 months. Attacks of pancreatitis then reappeared and are again disabling. She will be readmitted to the hospital shortly for completion of her operation. This error in surgical judgment has served to confirm our faith in 95 per cent pancreatectomy.

In the controlled environment of the hospital all patients except the one whose operation was incomplete have been free of pain, have had a normal diet and have gained weight. Exocrine and endocrine support has, of course, been regulated care-

fully. Those who have been classified as good or poor results are unwilling or unable to take care of themselves when released from the stabilizing influence of the hospital. Mental aberrations, alcoholism and drug addiction are, in varying degrees, the basis of their continuing problems—not pancreatitis.

Discussion

Our interest in this form of subtotal pancreatectomy was initially stimulated by two circumstances: first, we were unable to reproduce the good results of sphincterotomy as reported by some investigators;⁷ second, we tried to learn more of the nature of recurring pancreatitis by regularly visualizing the pancreatic duct roentgenographically during operations upon patients with this disease. Repeatedly pancreatic ductal obstruction was demonstrated within 2 to 3 cm. of the ampulla of Vater. Accordingly we questioned the usefulness of sphincterotomy under these conditions and wondered how destruction of the sphincter of Oddi could be expected to promote pancreatic drainage in the presence of an obstructed duct. Figure 2 shows two representative pancreaticograms in patients with chronic pancreatitis. Ductal obstruction is obvious in each. At present we perform sphincterotomy only in those patients whose pancreatic duct has been clearly demonstrated to be patent throughout (Fig. 3).

We hoped to have been able to treat a patient whose pancreatic duct was obstructed at a single point, in which case sphincterotomy might be relied upon to drain the head and uncinata process effectively while a distal pancreaticojejunostomy^{3,8} might similarly decompress the body and tail. Thus far in our experience such a patient has not been observed. Multiple points of obstruction always have been encountered when the patency of the pancreatic duct has been investigated in patients with this disease.

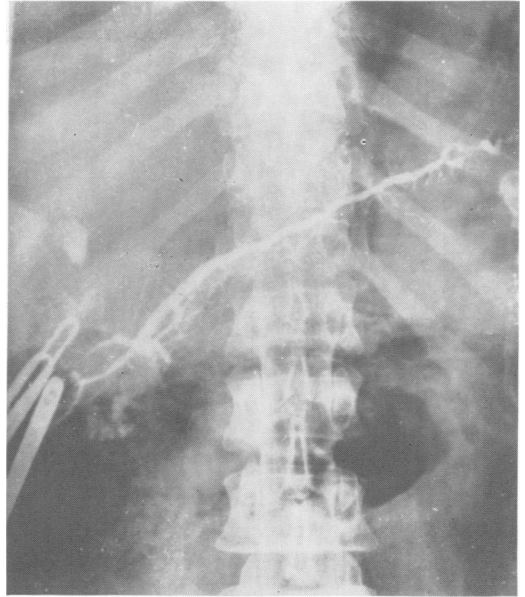


FIG. 3. Patent pancreatic duct in a patient with chronic pancreatitis. Under these circumstances sphincterotomy may be considered a legitimate operative procedure.

Patients with fibrocalcific pancreatitis have regularly been subjected to 95 per cent pancreatectomy (Fig. 4). It seemed unreasonable to us to believe that any operation short of resection could resolve the intense and apparently self-perpetuating pancreatitis demonstrated by these patients.

Early in this study some potential disadvantages to treating pancreatitis by near-total pancreatectomy were recognized. Most of these have not materialized subsequent to 95 per cent pancreatectomy. The mor-

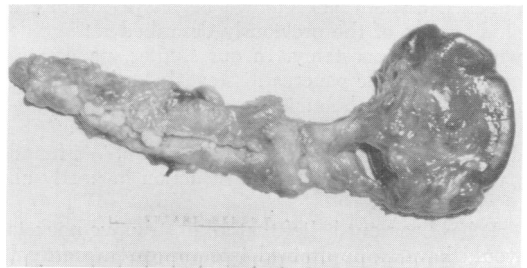


FIG. 4. Surgical specimen from a patient whose pancreatectomy was performed for chronic fibrocalcific pancreatitis.

tality rate has been zero. Serious postoperative complications have not been encountered; duodenal necrosis has been avoided by carefully leaving the superior or inferior pancreaticoduodenal vessels undisturbed. Sometimes it has been possible to preserve both of these vessels. Fortunately the common duct has not been injured. Ninety per cent of patients have achieved either an excellent or good result. Several have been followed long enough (5 to 10 years) to assure us that they, and patients operated upon more recently, have an excellent chance of remaining well. Irresponsibility in managing their diabetes and exocrine insufficiency has been a major problem in only a very few patients. We are convinced that 95 per cent distal pancreatectomy avoids many of the undesirable features of pancreaticoduodenectomy and provides patients with chronic pancreatitis a reasonable chance of cure with minimal risk and without major postoperative inconvenience.

Summary

The surgical treatment of 25 patients with chronic recurring pancreatitis is reviewed. Five underwent pancreaticoduodenectomy with one death and two serious

postoperative complications (stricture of the choledochojejunostomy). Twenty were subjected to 95 per cent distal pancreatectomy. This operation has been without mortality and has effectively controlled pain in these patients. At this time it appears to be an operation of great benefit to patients with all stages of well-established chronic pancreatitis.

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DISCUSSION

DR. CHARLES B. PUESTOW (Chicago): Until recent years the treatment of chronic pancreatitis has been quite unsatisfactory in the great majority of patients. Some years ago we began performing a modification of the previously described retrograde pancreaticojejunostomy. In our studies, pancreatograms in chronic pancreatitis revealed a long proximal stricture of the main pancreatic duct and intervening strictures throughout the balance of the duct with dilated pockets between them. We found partial or complete ductal obstruction in nearly all of our patients.

It has been our belief that all obstructive pockets would have to be drained into the gastrointestinal tract to relieve the patient's pain and pancreatic insufficiency. Therefore, we split the pancreas longitudinally throughout almost its entire length and

then anastomosed the pancreas to a defunctionalized limb of jejunum. Various methods of performing this anastomosis have been used including insertion of the pancreas into the bowel or performing a side-to-side pancreaticojejunostomy. We have performed this operation in approximately 100 patients. In nearly 75 per cent, the results have been highly satisfactory. The patients have been relieved of their pain and have had a gradual restoration of pancreatic function indicated by a gradual return to normal weight and adequate pancreatic digestion as indicated by a return to formed stools which sink. This usually occurs without the administration of additional pancreatic enzymes.

About 15 per cent of the patients showed some improvement but continued to have some mild distress and some evidences of pancreatic insufficiency. Approximately 10 per cent of the patients continued to have pain and were considered to