The Surgical Treatment of Pancreatic Disease

William P. Longmire, Jr., Ronald K. Tompkins,
L. William Traverso, and James F. Forrest

ABSTRACT: Periampullary carcinoma and chronic pancreatitis are the most frequent indications for operations on the pancreas.

Exploration and resection by pancreaticoduodenectomy is the preferred method of treatment for carcinoma of the periampullary region when the malignancy is localized to this area and when it does not invade the superior mesenteric vein. A direct anastomosis of the remaining pancreatic duct to the side of the jejunum is performed when possible. Total pancreatectomy has been utilized for extensive carcinomas of the pancreas and for early lesions with an essentially normal pancreatic parenchyma to avoid the hazards of the pancreaticojejunal anastomosis.

Chronic pancreatitis has been treated by various operative procedures. Duct stenosis and calculi, fibrosis and inflammation, and occasional pseudocyst formation commonly occur in the head of the gland. This area seems to act as a site of origin and perpetuation of the disease process. Proximal pancreatic resection by pancreaticoduodenectomy is being performed more frequently with anastomosis of five to 15 per cent of the pancreatic tail to the jejunum. Diabetes may be prevented and some external pancreatic enzyme function may thereby be preserved.

In any pancreaticoduodenectomy, preservation of the entire stomach and first portion of the duodenum and intact pylorus should be considered. Preliminary observations suggest that the presence of an intact stomach and a functioning pylorus tend to lessen the digestive disturbances following this resection.

After total pancreatectomy, further efforts should be made to extract and regraft the patient's viable islet of Langerhans cells from the excised pancreas. A reliable method of restoring insulin production would extend the use of total pancreatectomy for both malignant and benign pancreatic disease.

KEY WORDS: pancreatitis, pancreatic carcinoma, periampullary carcinoma, pancreaticoduodenectomy, pancreas biopsy, Whipple's operation.

Experimental surgical preparations of the pancreas have been utilized in physiological research for over 300 years; however, the surgical procedures currently employed in treatment of pancreatic diseases are of relatively recent origin. The normal pancreas with its potentially potent proteolytic enzymes, minute thin wall ducts, poorly developed fibrous parenchymal stroma and deep posterior location in the peritoneal cavity is an organ that presents major technical difficulties at operation and is associated with frequent, serious,
sometimes lethal postoperative complications. Thus the difficulties and the caution that have retarded the development of pancreatic surgery can be readily understood.

In an extensive monograph presented in part before the American Surgical Association in 1886 entitled *The Surgery of the Pancreas*, Nicholas Senn reviewed the comparative anatomy and physiology of the pancreas, described his own extensive experiments, and on the basis of these results in animals as well as a review of the available literature on pancreatic surgery, enunciated certain principles of management for diseases of the human pancreas. Although it is a tribute to his wisdom that a majority of his tenets remain sound today, actual pancreatic surgery of his time was limited to rare cases of drainage of cysts and abscesses, excision of gangrenous pancreatic tissue, and bypass biliary operations for common bile duct obstructions. Senn believed that complete extirpation of the head of the pancreas with the common bile duct was never justified.

Less than a half century later, Whipple, Parsons and Mullins reported the first successful operation of this type, and in the ensuing 43 years a large number and variety of surgical procedures on the pancreas have been reported. The majority of these operations are performed for (1) tumors, both benign and malignant; (2) chronic pancreatitis and its complications, pseudocysts, lithiasis and abscesses; and (3) trauma, either immediately following injury to control bleeding and disruption of the gland, or after some period of delay for treatment of a traumatic pseudocyst or chronic inflammation caused by persistent deformity of the duct of Wirsung.

It is the purpose of this paper to discuss our experiences with and current management of (1) malignant tumors of the pancreas and (2) chronic pancreatitis and its complications.

**CANCER OF THE PANCREAS**

Cancer of the pancreas, one of the body’s most highly malignant neoplasms, unfortunately seems to be increasing in the United States. According to the American Cancer Society, the death rate per 100,000 population has risen from 7.2 in 1953 to 9.6 in 1973 for men, and from 4.8 to 5.6 in women. A similar increase has been reported in Japan.

During the past 21 years there have been 238 patients operated upon at UCLA Hospital for cancer of the pancreas. Forty-seven patients were treated by a Whipple pancreaticoduodenectomy, six by total pancreatectomy and six by distal pancreatic resection. Also encompassed in this discussion are an additional 52 patients with so-called periampullary area tumors inasmuch as the diagnosis, treatment and outcome of these cases are essentially part of the problem when dealing with carcinoma of the head of the pancreas. Patients suffering from cancer of the terminal bile duct, ampulla of Vater and duodenum are clinically similar and present similar problems of therapy. In fact, it may be impossible to identify in the head of the pancreas the exact site of origin of the tumorous mass that is producing biliary obstruction until the specimen is removed, and studied grossly as well as microscopically by the pathologist.

We have elected to utilize our experience in these 238 operated cases to address certain puzzling problems relating to periampullary carcinoma and to present our current views concerning their management. These are the questions we have undertaken to discuss:

1. When, if ever, is pancreaticoduodenectomy indicated in the treatment of periampullary malignancy?