

TREATMENT OF PANCREATIC CYSTS*†

JACK GURWITZ, M.D.

ASSISTANT CHIEF OF SURGERY, VETERANS ADMINISTRATION HOSPITAL, NEWINGTON, CONNECTICUT

AND

ALFRED HURWITZ, M.D.

CHIEF OF SURGERY, VETERANS ADMINISTRATION HOSPITAL, NEWINGTON, CONNECTICUT;

ASSISTANT CLINICAL PROFESSOR OF SURGERY, YALE UNIVERSITY SCHOOL OF MEDICINE

NEWINGTON, CONN.

FROM THE VETERANS ADMINISTRATION HOSPITAL, NEWINGTON, CONNECTICUT,
AND THE DEPARTMENT OF SURGERY, YALE UNIVERSITY SCHOOL OF MEDICINE

PANCREATIC CYSTS may be of the proliferative or the non-proliferative type. Though the literature is scant, most proliferative cysts reported have been malignant.¹ Extirpation of this type of cyst is the treatment of choice because it represents a precancerous lesion. Nonproliferative cysts, on the other hand, rarely if ever undergo malignant degeneration and therefore can be treated in one of several ways. Extirpation should be employed if the cyst can be easily enucleated. If the cyst is fused intimately with surrounding structures, its removal might prove hazardous and increase unnecessarily the mortality rate. In the past, marsupialization has been employed. Gussenbauer² in 1883 performed the first external drainage of a pancreatic cyst. Judd³ reported 33 cases of marsupialization, many of which were followed by sinus tracts that persisted for two years. Kerr⁴ had a patient who drained for 15 years. The objections to this form of therapy are autodigestion of the abdominal wall, infection of the cyst and sinus tracts, severe inanition and repeated hemorrhages. Attempts to close these fistulae by irradiation,⁵ radium,⁶ and sclerosing agents⁷ have not proven efficacious. Marsupialization should have little place in our present surgical armamentarium.

Another therapeutic approach, which has an increasing number of proponents, is the performance of an anastomosis between the cyst and a hollow viscus. The first anastomosis was performed by Jedlicka,⁸ between the cyst and stomach. Anastomoses between the cyst and the gallbladder have been reported by Waltzel⁹ and Neuffer¹⁰ with variable results. Failures have occurred probably because of contamination of the cyst by bacteria and intestinal contents.

Recently Adams¹¹ reported two cases of anastomosis between the jejunum and pancreatic cyst with an auxiliary jejuno-jejunostomy. Both these patients had satisfactory convalescences which he attributed to successful shunting of the jejunal contents away from the lumen of the cyst. To increase the likelihood of this diversion, a Roux-en-Y anastomosis was performed in one of our cases.

* Published with permission of the Chief Medical Director, Department of Medicine and Surgery, Veterans Administration, who assumes no responsibility for the opinions expressed or conclusions drawn by the author.

† Submitted for publication January, 1948.

PANCREATIC CYSTS

Case 1.—A. P., a 27-year-old white male, entered the hospital on April 11, 1947, complaining of severe left lower quadrant and para-umbilical pain. Twenty-eight hours before admission he first became aware of para-umbilical pain which radiated to the left lower quadrant. Although the pain was constant, there were occasional severe colicky attacks. There was no nausea, vomiting, diarrhea or melena. The urinary tract was negative.

Examination revealed an acutely sick male lying with his thighs maintained in flexion. Temperature was 99° F., pulse 92 and respirations 20. The abdomen was scaphoid. Marked tenderness and spasm were elicited over the left rectus abdominis muscle. Hyperperistalsis was present. Rectal examination was uninformative. The white blood cell count was 15,400. The differential smear was normal. Serum amylase was 8 units (normal 8-64 units.) Intravenous pyelography revealed a displacement of the left ureter toward the midline, obliteration of the left psoas shadow and probable indentation of the lesser curvature of the stomach. The patient's symptoms became more severe and three hours after admission laparotomy was performed.

Operation: The abdomen was opened through a left rectus muscle-splitting incision. A large pancreatic cyst was found lying in the lesser omental cavity with a thumb-like projection that protruded behind the stomach through the gastrohepatic omentum. This projection was markedly hyperemic and covered with fresh fibrin. There was no evidence of fat necrosis or free fluid in the abdomen. After exposing the cyst through the gastrocolic ligament, the finger-like projection was freed from the gastrohepatic omentum and was excised. A large amount of necrotic debris and serosanguineous fluid was evacuated from the cyst which comprised the entire body and tail of the pancreas. Because the cyst was firmly adherent to the base of the transverse mesocolon, the splenic vessels and the posterior wall of the stomach, extirpation was deemed unwise. The jejunum was then divided about 10 inches from the ligament of Treitz. The aboral end was delivered through an opening in the mesocolon and was anastomosed to the dome of the cyst with a two-layer technique. The oral end of the jejunum was anastomosed to the distal loop about 6 inches from the cysto-jejunostomy in the manner of Roux.

The fluid evacuated from the cyst was found to contain pancreatic ferments and a pathological diagnosis of pseudocyst of the pancreas was made.

Clinical course. The patient made an uneventful convalescence. A gastro-intestinal series on the 12th postoperative day revealed a normal intestinal pattern. There was no filling of the cyst cavity. The patient was discharged on the 14th postoperative day. A gastro-intestinal series taken two and six months postoperatively revealed no abnormalities. He has continued to be asymptomatic.

COMMENT

Although the follow-up of this patient has been short, the advantages of an internal anastomosis over marsupialization are evident in the patient's asymptomatic convalescence. The anastomosis en-Y should prove more effective than a cysto-jejunostomy in continuity, by virtue of side-tracking the intestinal content away from the cyst.

Case 2.—R. L. D., a 54-year-old male, entered the hospital for the fifth time on April 1, 1947, complaining of nausea and vomiting of two months' duration.

He was first admitted to the hospital in December 1941, because of episodes of gastric distress, pain and flatulence. After the gastro-intestinal and gallbladder series were reported negative, he was discharged. He returned in September 1942, because of weakness, weight loss and jaundice. On October 17, 1942, a laparotomy revealed a large cyst of the head of the pancreas which was drained externally. In March, 1944, he entered the hospital for the third time because of persistent drainage from the sinus tract. Surgical excision of the cyst and sinus tract was attempted, but the surgeon was unable to remove

the cyst in toto. A new sinus developed postoperatively and continued to drain after he left the hospital. This sinus tract closed spontaneously in January, 1945. In March, 1945, he entered again and an incisional hernia was successfully repaired.

He felt well until February, 1947, when he began to have nausea and vomiting which became progressively worse. He entered another hospital where he was treated conservatively for intestinal obstruction for 20 days. He left the hospital only to return four days later with the same complaints. After a few days he was symptomatically better and was discharged. Forty-eight hours later, his symptoms recurred and he entered the hospital on April 1, 1947, with a diagnosis of intestinal obstruction.

Physical examination revealed a thin, undernourished, slightly jaundiced, chronically ill male. A mass the size of a large orange, which appeared to be firmly adherent to the deep structures, was felt in the epigastrium. The red blood cell count was 3,600,000; hemoglobin 12 Gm.; white blood cell count 10,000 with 79 per cent neutrophils. The icterus index was 28. Roentgenograms of the chest revealed a right apical opacity which had increased in size since previous roentgenograms taken in 1941. There was also an increase in the number and size of emphysematous blebs in the right lung since 1941. Sputum and gastric examinations revealed no acid fast bacilli.

Because of the persistence of jaundice and the patient's downhill course, laparotomy was performed on April 19, 1947, through a transverse upper abdominal incision dividing both recti. A large cyst, measuring 10 cm. in diameter, was found involving the head and body of the pancreas. The gallbladder was tense, appeared normal, but could not be emptied by manual compression. The cyst was exposed and opened. After draining the amber colored fluid, a line of cleavage was finally established between the cyst wall and capsule. The cyst was removed completely. The gallbladder was then easily compressible and was emptied. It was inferred that extirpation of the cyst relieved compression of the common duct. No injury to the common duct was noted. A rubber Penrose drain was left in the lesser omental cavity and the abdomen closed in layers.

The fluid from the cyst contained pancreatic ferments. The pathological diagnosis was cyst of the pancreas, either retention or pseudocyst.

Clinical course. On the first postoperative day the patient had a spontaneous pneumothorax, and at this time tubercle bacilli were found in the sputum. Pneumothorax was continued with weekly refills.

On the fourth postoperative day, biliary drainage was noted from the operative wound. Stools became clay colored. Lipiodol injected into the fistula entered the duodenum. Patient continued to have epigastric distress relieved on occasion by probing the sinus tract with a release of bile-stained material and a concomitant diminution in the icterus index. On May 12, 1947, a catheter was inserted into the sinus tract. Diodrast outlined the entire biliary tree and the catheter appeared to be in the common duct. Patient was prepared for further surgery.

The second exploration was accomplished on July 7, 1947, with the catheter still in the common duct. A side-to-side choledochoduodenostomy, as advocated by Sanders,¹² was performed. A T-tube was inserted into the common duct above the site of the anastomosis. This was brought out through a separate stab wound in the flank.

The postoperative course was uncomplicated. On the 36th postoperative day, the T-tube was removed after repeated lipiodol injections revealed the dye entering the duodenum. The original sinus wound drained less and less bile-stained material, and finally closed. The icterus index became normal. He had no complaints when last examined in October, 1948. The pneumothorax refills have been continued without incident.

COMMENT

This patient with a long history of a pancreatic cyst and draining fistulae underwent extirpation of the cyst. Unfortunately, a biliary fistula developed, which required further surgery. Since bile was not noted on the dressing

PANCREATIC CYSTS

until the third postoperative day, it is probable that the lower part of the common duct damaged by the previous compression of the duct by the cyst had been eroded by the pancreatic ferments postoperatively. In retrospect, an anastomosis en-Y, as described in Case I, would have been preferable.

DISCUSSION

The incidence of carcinoma associated with proliferative pancreatic cysts is so high that the complete excision of these cysts should be performed. In the treatment of the non-proliferative type of pancreatic cyst, the decision is less clear cut. Marsupialization in general is a poor operation because of its many untoward sequelae: erosion of the skin, infection of the sinus tract, and failure of the fistula to heal. The operation of choice is either an internal anastomosis between the cyst and the jejunum or the extirpation of the cyst wall. The latter procedure should be performed whenever possible, but it is contraindicated when its employment might jeopardize the integrity of important contiguous structures. If jaundice is present preoperatively as in Case 2, excision of the cyst is unsafe because of the high incidence of injury to the common duct, either at the time of operation or by enzymatic erosion postoperatively. Carter and Slattery¹³ reported injuring the common duct in two of the five cases treated by excision of the cyst. The rent in the duct was closed and a T-tube inserted into the common duct proximally. These patients had a satisfactory but protracted convalescence. An internal anastomosis between the cyst and jejunum is a safer procedure in the complicated case. The morbidity and mortality for this operation cannot be properly adduced until a much larger series is compiled. The results thus far have been so gratifying that employment of this procedure seems warranted. Infection of the cyst wall should be a less frequent complication, if the intestinal stream is shunted away from the cyst by the performance of a cysto-jejunostomy en-Y rather than by anastomosing those two structures in continuity.

SUMMARY

1. Two cases of non-proliferative cysts of the pancreas have been operated upon successfully.
2. One was treated by excision of the wall, the other by an anastomosis between the cyst and the jejunum en-Y (Roux).
3. Non-proliferative cysts involving the head of the pancreas should not be extirpated because of the high incidence of injury to common bile and pancreatic ducts.
4. This is the first report of the successful application of the Roux type of anastomosis to the treatment of pancreatic cysts.

REFERENCES

- ¹ Bockus, H. L.: *Gastroenterology*, 3: 807-847, 1947.
- ² Gussenbauer: Quoted by Jurasz, A.: *Arch. Klin. Chir.*, 164: 272, 1931.
- ³ Judd, E. S., H. Mattson and H. R. Mahorner: *Archives of Surg.*, 22: 838, 1931.
- ⁴ Kerr, A. A.: *Surg., Gynec. & Obst.*, 27: 40, 1918.

- ⁵ Culler, R. M.: *J. A. M. A.*, **75**: 20, 1920.
- ⁶ Hamilton, C. S.: *Surg. Gynec. & Obst.*, **35**: 655, 1922.
- ⁷ Gordin, A. E.: *Ann. Surg.*, **106**: 1095, 1937.
- ⁸ Jedlicka, R.: *Abl. Chir.*, **50**: 132, 1923.
- ⁹ Waltzel, P.: Quoted by Adams, R., and R. A. Nishijima.
- ¹⁰ Neuffer, H.: *Arch. Klin. Chir.*, **170**: 488, 1932.
- ¹¹ Adams, R., and R. A. Nishijima: *Surg., Gynec. & Obst.*, **83**: 181, 1946.
- ¹² Sanders, R. L.: *Ann. Surg.*, **123**: 847, 1946.
- ¹³ Carter, R. F., and L. R. Slattery: *Surg. Clinics of North Amer.*, **411**, 1947.

BOOK REVIEW

ATLAS OF PLASTIC SURGERY, BY M. I. BERSON, M.D.,
NEW YORK CITY, GRUNE & STRATTON, INC.—1948.

In his "Atlas of Plastic Surgery" Berson presents graphically standard methods and technics in reparative surgery. The normal anatomy and common types of deformity are depicted in line drawings and photographs. Necessary instruments and consecutive steps for repair of these deformities are likewise illustrated by photographs, drawings, and an accompanying explanatory text.

In the eight chapters into which the Atlas is subdivided, that dealing with the nose is by far the most complete and most valuable. It is recommended to any who are uncertain of indications for the several technics of corrective rhinoplasty. The presentation is simple and direct and shows an appreciation by the author of the methods, problems and pitfalls in this procedure. The chapters on the ear, eyelids and lips are likewise well done and most of the corrective technics for minor deformities of these structures are graphically presented. The operation of "face-lifting," and some of the technics of mammaplasty and lipectomy are presented in some detail. The Mirault operation for single harelip and the Federspiel operation for double harelip are shown. The methods presented for cleft palate repair are taken from the writings of Dorrance and Bransfield. The securing and use of fascia, bone, and cartilage transplants for deformities of the face are illustrated.

The very important matter of skin transplantation, both as pedicle flaps and as free grafts, is disappointingly inadequate. The author does present the Z-plastic procedure, which lends itself to illustration. Various types of skin suture and repair are shown, including closure by the somewhat time-worn impractical geometrical patterns that have been passed down from generation to generation of plastic surgeons.

For those surgeons desiring a better understanding of cosmetic plastic surgery of the face and particularly of the nose, lips, and ears, this Atlas will prove of real value. It will not be helpful, however, to those interested in general plastic surgery of massive and complicated repairs of the face and jaws and of reparative surgery of the extremities.

—BRADFORD CANNON, M.D.