

The natural history of chronic pancreatitis after operative intervention: The need for revisional operation



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Background. For patients with chronic pancreatitis, duodenum-sparing head resections and pancreaticoduodenectomy are effective operations to relieve abdominal pain. For patients who develop recurrent symptoms after their index operation, the long-term management remains controversial.

Methods. Between 2002 and 2014, patients undergoing operative intervention for chronic pancreatitis were identified retrospectively. Patients requiring reoperation after their index operation were reviewed.

Results. A total of 121 patients with chronic pancreatitis underwent an index operation. At a median time of 33 months, 85 patients underwent no further operative intervention, while 36 patients underwent reoperation. A reoperative procedure was completed with acceptable perioperative morbidity and blood loss. After a revision operation, 25% of patients became narcotic independent. Narcotic requirements decreased from 143 morphine equivalent milligrams per day (MEQ/d) to 80 MEQ/d, and 58% of patients required less than 50 MEQ/d. Insulin requirements were not increased from preoperative levels. Multivariate analysis demonstrated only narcotic requirement and exocrine insufficiency after the index operation to be predictive for the need for a revision operation.

Conclusion. Our data demonstrate the following: (1) A significant number of patients undergoing duodenum-sparing head resections (26%) or pancreaticoduodenectomy (29%) required reoperation for recurrent abdominal pain; and (2) a revisional operation can be effective in relieving recurrent abdominal symptoms. Patients with recurrent symptoms should be considered for additional operative intervention. (*Surgery* 2016;160:977-86.)

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THE MANAGEMENT OF ABDOMINAL PAIN in patients with chronic pancreatitis remains a challenge. Often a multidisciplinary approach is required, and optimal management varies from medical therapies to endoscopic intervention or radical operative resection. Ultimately, 50% of patients develop progressive symptoms requiring operative intervention.¹

Traditionally, operations including pancreaticoduodenectomy (PD), duodenal-sparing head resections (DSHR), and decompressive procedures have been offered to patients with chronic pancreatitis to relieve abdominal pain.²⁻⁵ In recent years, total pancreatectomy and islet cell autotransplantation (TPIAT) have emerged as a viable therapeutic modality for patients with refractory symptoms.^{6,7} Despite operative intervention, a subset of patients fail to respond or develop recurrent symptoms after their index operation.⁸ These patients often present with persistent narcotic requirements as well as progressively worsening endocrine and exocrine function.

The long-term management of patients with recurrent symptoms after an index operation for chronic pancreatitis remains controversial. There are few reports in the literature to date that examine the indications for reoperation.^{9,10}

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Furthermore, the feasibility and complexity of reoperations involving the pancreas are not well described. The aim of this study was to review the outcomes of those patients requiring additional surgical care after a failed index operation.

METHODS

Patient selection. A retrospective, single-center review of patients undergoing PD, DSHR (Beger, Bern, or Frey), or Puestow as an index operation for chronic pancreatitis at a center specializing in pancreatic diseases between the years 2002–2014 was performed. Institutional Review Board approval was obtained prior to initiation of the study. Patients were identified for inclusion using the University of Cincinnati Pancreatic Disease Center database. Prior to operative intervention, patients were diagnosed with chronic pancreatitis after evaluation by a multidisciplinary team consisting of gastroenterology, endocrinology, radiology, and pancreatic surgeons. The indication for the index operation was intractable abdominal pain despite medical and/or endoscopic intervention.

The objective measure used to evaluate patients' pain was narcotic requirements recorded as morphine equivalent milligrams per day (MEQ/d). The type of index operation was determined for each patient based on history and symptomology, radiographic findings, and extent of disease. Patients requiring reoperation were also identified and reviewed. Patients were excluded if there was inadequate follow-up documentation.

Data collection. Retrospective chart review was performed to ascertain all pertinent patient information. Data collected for patients included demographic information, etiology of disease, disease duration prior to index operation, perioperative and operative factors for both index and revisional operations, time between index and revisional operations, and postoperative complications. Furthermore, narcotic requirements, insulin requirements, and exocrine enzyme replacement requirements were collected for patients prior to index operation, after an index operation, and after a revisional operation.

Data analysis. The data collected were grouped appropriately to build categorical or nominal variables. Patients requiring reoperation and those not requiring reoperation were compared according to patient demographic information, disease characteristics, perioperative factors, postoperative complications, narcotic requirements, insulin requirements, and exocrine enzyme requirements. Narcotic requirements are reported as MEQ/d calculated from narcotic conversion software (Narcotic

Converter; GlobalRPH Inc, Detroit, MI, http://www.globalrph.com/narcotic_converter.htm). Insulin requirements are reported as international units per day (U/d).

Paired *t* tests, Wilcoxon two-sample test, and χ^2 analysis were used to compare patient demographics, disease characteristics, as well as preoperative and postoperative outcomes. Univariate and multivariate logistic regression analyses were performed in order to analyze potential predictors of reoperation after an index operation. Statistical analysis was performed using SAS statistical software (Version 9.3; SAS Institute, Inc, Cary, NC).

RESULTS

Overview of index and revisional operations.

Over a 12-year period, 121 patients underwent index operative intervention for intractable abdominal pain secondary to chronic pancreatitis. The cohort consisted of 49.6% men ($n = 60$) with a median age at index operation of 47 years (range 27–72). The most common etiology of pancreatitis was alcohol (42%), followed by idiopathic (33%), pancreas divisum (12%), and gallstones (7%). Patients underwent either PD ($n = 45$); DSHR including Beger, Bern, or Frey ($n = 62$); or Puestow ($n = 14$). Within this cohort and at a median follow-up of 33 months, 85 patients underwent no further operative intervention, while 36 patients underwent reoperation for recurrent refractory abdominal pain as presented in the Figure. The mean time between the index operation and reoperation was 27.1 months. Patients requiring reoperation consisted of 55.6% females ($n = 20$) with a median age at reoperation of 43 years. The most common etiology of pancreatitis for patients requiring reoperation was idiopathic (38.9%), followed by alcohol (36.1%), pancreas divisum (13.9%), and gallstones (5.6%).

Of 45 patients who underwent PD for the index operation, 66.7% ($n = 30$) required no further operation, 31.1% ($n = 14$) underwent TPIAT, and 2.2% ($n = 1$) required revision of the pancreaticojejunostomy anastomosis. Of 62 patients who underwent DSHR, 71% ($n = 44$) required no further operation, 21% ($n = 13$) underwent TPIAT, 4.8% ($n = 3$) underwent a more extensive coring procedure, and 3.2% ($n = 2$) were converted to PD. Additionally, of the 14 patients who previously had undergone the Puestow procedure, 78.6% ($n = 11$) required no further reoperation, while 21.4% ($n = 3$) underwent TPIAT for progressive parenchymal disease. Regardless of the type of index operation, a majority of patients ($n = 30$, 83.3%) underwent TPIAT for revisional operation.

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