OUTCOMES OF SURGICAL MANAGEMENT OF CHRONIC PANCREATITIS AT HUE CENTRAL HOSPITAL

Dang Nhu Thanh[1], Dang Ngoc Hung[2],
Ho Van Linh[2], Nguyen Thanh Xuan[2]

ABSTRACT

Background: *Chronic pancreatitis (CP) is a benign inflammatory disease involving the progressive and irreversible destruction of the pancreatic tissue, fibrosis and loss of exocrine and endocrine function. Clinical management of CP is also challenging because of the incomplete understanding of disease and pain pathogenesis. In Hue Central Hospital, CP is primarily treated with open drainage procedures. Laparoscopic surgery for CP was also recently implemented in 2018. We conducted this study to assess the short-term and long-term results of different surgical interventions (open and laparoscopic) for CP in Hue Central Hospital.*

Methods: *A descriptive, cohort study on 31 patients diagnosed with CP and treated surgically at Hue Central Hospital from 1/2013 – 1/2019.*

Results: *Most patients were male, aged more than 40 years old. The most common symptoms at presentation was abdominal pain with varying degree. The most frequent procedure was open lateral pancreático-jejunostomy (Partington-Rochelle procedure) with or without choledochojejunostomy. Laparoscopic lateral pancreático-jejunostomy was performed in two (6.5%) patients. There was one case of splenic vein injury (3.4%) and one case of seromuscular injury to the transverse colon during adhesiolysis, which was repaired primarily by interupted suture without further complications (3.4%). Complications including anastomotic bleeding, grade A pancreatic fistula, ileus, cardiopulmonary complications were more common in open group. Most patients achieved complete or partial pain free at six months after operation. Only two patients (6.7%) in the open group had persistent pain after surgery and more likely due to inedequate stone removal at the first operation*

Conclusions: *The type of surgery should be chosen depending on the ductal morphology, presence of inflammatory mass, extent of diseases with good short-term and long-term results. Laparoscopic surgery represent an alternative to open surgery with similar results, better cosmetic effects and shorter hospital stay.*

I. INTRODUCTION

Chronic pancreatitis (CP) is a benign inflammatory disease involving the progressive and irreversible destruction of the pancreatic tissue, fibrosis and loss of exocrine and endocrine function. CP is associated with different etiologies including alcohol abuse, genetic causes (mutations in the cystic fibrosis gene, hereditary pancreatitis), ductal obstruction (eg, trauma, pseudocysts, stones, tumors, possibly pancreas divisum), tropical pancreatitis, systemic

1. Hue University of Medicine and Pharmacy
2. Hue Central Hospital

Corresponding author: Dang Ngoc Hung
Email: dr.dangngochung@gmail.com
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disease such as systemic lupus erythematosus, hypertriglyceridemia, possibly hyperparathyroidism, autoimmune pancreatitis and idiopathic pancreatitis.

The incidence of CP varies between countries. While European studies commonly show incidence rates around 7 per 100.000 [6], [12], [13] higher incidence rates of 14.4 per 100,000 have been reported for example in Japan (40). Clinical manifestations of CP include steatorrhea, malabsorption, diabetes and unbearable pain [17]. The diagnosis of CP is primarily based on the classic triad of pancreatic calcifications, steatorrhea, and diabetes mellitus. However, laboratory studies and imaging results may be normal in certain cases in which an abnormal secretin pancreatic function test is required for diagnosis.

Clinical management of CP is also challenging because of the incomplete understanding of disease and pain pathogenesis. Initial management of CP composes of risk factor modification, supportive behavioral therapy, and nutritional optimization with pancreatic enzyme replacement. Forty to 75 percent of patients with CP fail medical and endoscopic therapies and are considered for surgery, most commonly for debilitating abdominal pain [2], [3], [11]. The goals of surgery are to effectively and durably relieve pain, minimize short- and long-term morbidity, and preserve pancreatic parenchyma and therefore long-term pancreatic function. Surgery may also be required to treat complications of CP that are not pain related, such as biliary, duodenal, or colonic stenosis; pancreatic pseudocyst; and gastric variceal bleeding due to splenic vein thrombosis. The operative approach is primarily selected based on ductal anatomy and gland morphology. Patients with a dilated main pancreatic duct (≥6 to 7 mm) should undergo a drainage procedure such as lateral pancreaticojejunostomy (LPJ) or Frey procedure. Patients with a nondilated main pancreatic duct (<6 to 7 mm) should undergo one of the resection procedures such as pancreaticoduodenectomy (PD), distal pancreatectomy (DP), or total pancreatectomy according to the extent of disease. Priliminary reports on the application of minimally invasive techniques (laparoscopic and robotic) have been described for PD, DP, and LPJ which showed similar results to open procedures and addition benefits of laparoscopic approach with the cost of prolonged duration of surgery.

In Hue Central Hospital, CP is primarily treated with open drainage procedures. Laparoscopic surgery for CP was also recently implemented in 2018. We conducted this study to assess the short-term and long-term results of different surgical interventions (open and laparoscopic) for CP in Hue Central Hospital.

II. SUBJECTS AND METHODS

2.1. Subjects

31 patients diagnosed with CP and treated surgically at Hue Central Hospital from 1/2013 – 1/2019.

Inclusion criteria

- Diagnosed with CP by clinical, laboratory and imaging characteristics
- Treated with surgery (open or laparoscopic) depending on the ductal morphology and extent of diseases (drainage or resection procedures)

Exclusion criteria

- Acute exacerbations of CP
- Severe comorbidities
- Presence of pancreatic neoplasm confirmed by pathologic report
- Refusal of patient

2.2. Methods

Study design: A descriptive, cohort study

Study protocol

- After preoperative tests were done, the surgical intervention was chosen for each patient base don the morphology of the main pancreatic duct (dilated vs non-dilated), the presence of an inflammatory mass (resection vs drainage) and the center of disease (type of resection).

- After surgery, nasogastric tuve was removed after bowel peristalsis returned and diet was advanced as tolerated. The drains' effluent was routinely sampled on day-3 postoperatively for measurement of amylase concentration and the drains were removed if there was no evidence of pancreatic fistula.

- Information related to clinical and paraclinical characteristics, intraoperative findings, and postoperative complication were documented.

- Pain level was assessed by VAS pain scale.

- Patients were followed up one and six months after operation.

Data analysis

Data were analysed by SPSS 20.0 using medical statistical methods

III. RESULTS

Table 3.1. General characteristics of patients

Variables	Values
Gender (Male/Female)	30/1
Age (years)	45.6 ± 11.6
Symptoms	
Weight loss	29 (93.5%)
Jaundice	6 (19.4%)
Steatorrhea	3 (9.7%)
Abdominal pain	31 (100%)
Serum amylase at admission	
Mean value(U/L)	232,4 ± 22,3
Increased level of amylase	12 (38.7%)
Associated diabetes	10 (32.3%)
Location of stones on CT scan	
Head	6 (19.4%)
Body	20 (64.5%)
Tail	0 (0%)
Multiple location	5 (16.1%)
Presence of inflammatory mass	3 (9.7%)
Dilated main pancreatic duct ≥ 7mm	28 (90.3%)
Dilated common bile duct	5 (16.1%)
Pancreatic pseudocyst	6 (19.4%)

Most patients were male, aged more tan 40 years old. The most common symptoms at presentation was abdominal pain with varying degree. Steatorrhea and increased serum amylase only presented in a minority of patients. One third of patients had diabetes before surgery. Stones was located mainly in the body or in multiple locations. Dilated main duct was recoreded in more than 90% of cases.

Table 3.2. Types of procedures

Variables	Values
Open lateral pancreatico-jejunostomy	25 (80.6%)
With choledochojejunostomy	5 (16.1%)
Open Frey procedure	3 (9.75)
Open Whipple procedure	1 (3.2%)
Laparoscopic lateral pancreaticojejunostomy	2 (6.5%)

The most frequent procedure was open lateral pancreático-jejunostomy (Partington-Rochelle procedure) with or without choledochojejunostomy. Laparoscopic lateral pancreático-jejunostomy was performed in two (6.5%) patients.

Table 3.3. Intraoperative findings

Variables	Open procedures	Laparoscopic procedures
Operative time (mins)	124.4 ± 45.9	150.5 ± 21.5
Intraoperative blood loss (ml)	50.5 ± 20.5	55.5 ± 23.5
Intraoperative complications		
Splenic vein injury	1 (3.4%)	0 (0%)
Adjacent bowel injury	1 (3.4%)	0 (0%)

The operative time seemed to be longer in laparoscopic procedures. The intraoperative blood loss volume was similar in two groups. There was one case of splenic vein injury (3.4%) and one case of seromuscular injury to the transverse colon during adhesiolysis, which was repaired primarily by interupted suture without further complications (3,4%).

Table 3.4. Postoperative characteristics

Variables	Open procedures (N=29)	Laparoscopic procedures (N=2)
Median postoperative stay (days)	6 (4-10)	5
Median time to first flatus (days)	2 (1- 4)	2
Complications		
Anastomotic bleeding	1 (3.4%)	0 (0%)
Pancreatic fistula	2 (6.9%)	0 (0%)
Ileus	4 (13.8%)	0 (0%)
Wound infection	5 (17.2%)	1 (50%)
Cardiopulmonary	3 (10.3)	0 (0%)

The postoperative stay seemed to be shorter in the laparoscopic group while the time to first flatus was identical in both groups. Complications including anastomotic bleeding, grade A pancreatic fistula, ileus, cardiopulmonary complications were more common in open group.

Table 3.5. Long-term follow-up resutls at 6 months

Variables	Open procedures (N=29)	Laparoscopic procedures (N=2)
Complete pain relief	15 (51.7%)	1 (50%)
Partial pain relief	12 (41.4%)	1 (50%)
No pain relief	2 (6.9%)	0 (0%)
Readmission for pain	6 (20.7%)	1 (50%)
Reintervention	2 (6.9%)	0 (%)
Mortality	0 (0%)	0 (0%)

Long-term follow-up revealed that most patients achieved complete or partial pain free at six months after operation. Only two patients (6.7%) in the open group had persistent pain after surgery and more likely due to inedequate stone removal at the first operation. These two patients eventually required reintervention with enlargement of the anastomosis, mainly to the head and complete stone removal, resulting in improvement in pain. Readmission for pain due to was noted in 6 (20.7%) of patients. There were no postoperative mortality.

IV. DISCUSSION

The clinical and paraclinical characteristics in our study were similar in reports by Pham Hoang Ha (2012), Ammann RW (1999) with male, middle age predominance. Pain continued to be the most significant symptoms and was the reasons for most operative indications (100%). In Pham Hoang Ha study, pain presented in 98% of patients [1], [2]. Pain is associated with pancreatic hyperstimulation, ischemia and acidosis, obstruction of larger or small ducts, inflammation or neuropathic mechanisms. Patients with CP are at increased risk of pancreatic cancer which may cause a change in pain pattern, and often have extrapancreatic sources of pain associated with maldigestion.

Most patients in our study had dilated main pancreatic duct (90.3%). Debate on the size of pancreatic duct to justify candidacy for drainage procedures is not new. Most consider duct size of at least 8 mm sufficient to justify a PJ, whereas others regard a duct size of 5 mm as the limit to perform a drainage operation by performing apancreatojejunostomy rather than a PJ [7]. Alternatively, a longitudinal V-shaped excision of the ventral aspect of the pancreas combined with an LPJ sewn to the capsule of the pancreas was proposed by Izbicky. It has the potential to address the rare cases of sclerosing ductal pancreatitis or 'small duct disease' with main pancreatic duct diameter of less than 3 mm. In laparoscopic surgery, selection of patients based on the the diameter of the pancreatic duct was of even more important. Palanivelu et al. operated on patients with MPDD of 10 mm and reported no conversions to open surgery [12], whereas Tantia et al. reported 3 conversions in patients with MPDD <9 mm [16]. In a short series of 5 cases of the first UK experience from the NHS, Khaled et al. reported the MPDD in 5 patients who had laparoscopic LPJ was >8 mm in 4 but 6 mm in 1 patient, and the utilization of laparoscopic ultrasound facilitated identification of the pancreatic duct for them [11].

The rate of intraoperative complication in our study was similar to other series. Pham Hoang Ha (2012) reported one case of splenic vein injurt durng pancreatic duct opening, one case of hemorrhage because of splenic injury [1]. In the series of Cahen et al (2011), there were only two cases of bleeding, one cases of anastomotic leak, and three cases of wound infection [5]. The two cases of anastomotic leak in our study were only detected by routine

sampling of abdominal drainage fluid. These two patients had no symptoms (grade A) and successfully treated conservatively.

Most of our patients received complete pain relief and partial pain relief after surgery. In the study of Gonzalez (1997) and Greenlee (1990), long term pain relief of this drainage operation has been shown to be around 60-70%, and up to 98% with low mortality and morbidity approximately 3% and 20%, respectively) [8], [9], [10].

There were two patients requiring reoperation due to inadequate stone removal in the pancreatic head during the first surgery. Similar results were observed in other studies. Most of the recurrences arise in the remnant of the pancreatic head. Revisional pancreatic head resection can be advised if the primary operation has left too much tissue in the pancreatic head area or alternatively ppPD/PD can be performed for definite control of the disease confined to the pancreatic head [4].

Laparoscopic surgery for the treatment of CP was started in our hospital only recently with promising results with shorter hospital stay, minimal complications and similar long-term results.

Rege SA, et al reported a mean postoperative hospital stay of 5.25 days. A 2014 review by Khaled et al. with 36 cases of laparoscopic LPJ had the mean hospital stay after laparoscopic LPJ about half of the mean hospital stay of 8 to 10 days after conventional open LPJ. Rege SA et al also reported no mortality and 3% morbidity rate (postoperative bleeding in 1 of the 33 patients) [15].

V. CONCLUSION

Pain is the most frequent symptom and reason for surgery in patients with CP. The type of surgery should be chosen depending on the ductal morphology, presence of inflammatory mass, extent of diseases with good short-term and long-term results. Laparoscopic surgery represent an alternative to open surgery with similar results, better cosmetic effects and shorter hospital stay.

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