

Case Series

Lateral pancreaticojejunostomy: a case series

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ABSTRACT

Chronic pancreatitis and tropical pancreatitis lead to frequent abdominal pain. To reduce this pain, lateral pancreaticojejunostomy (LPJ) is the most common surgical procedure. Despite the evidence available for the effectiveness of surgical therapy, the decision for indication, type, and timing of surgical intervention has always been debated. In this case series we make an attempt to define the possible timing of the procedure and the category of patients who might benefit from it. 14 out of 65 patients who were evaluated from July 2018 to December 2021 were included in this study. All patients were observed with pain in the abdomen, weight loss, steatorrhea, and malabsorption while none of the patients had pancreatic head mass as per cross-sectional imaging. Fourteen patients with confirmed chronic atrophic pancreatitis with severe symptoms and dilatation of the pancreatic duct were operated upon. Three of these were considered failures since they continued to have no weight gain and either pain or malabsorption. The failures were mainly due to impaired pancreas because of chronic disease and not due to failure of the procedure. Chronic pancreatitis cases, with a short duration of illness, have a better chance of success in surgery. We conclude that one can resort to LPJ in cases that do not respond to medical therapy, continue to suffer from pain, malabsorption, and weight loss. It is a relatively safe procedure that provides good pain relief with low postoperative morbidity, further preventing exacerbations and maintaining appropriate pancreatic exocrine and endocrine functions.

Keywords: Pancreatitis, LPJ, Abdominal pain

INTRODUCTION

Chronic pancreatitis (CP) implies longstanding inflammation of the pancreatic parenchyma. The most common etiology is alcohol-induced in the West and now increasing in South-East Asia. Asian patients are often diagnosed with tropical pancreatitis with genetic and dietary risk factors.¹

The clinical course of both varieties of the disease is similar; flow obstruction of pancreatic secretions due to the development of intra-ductal calcium depositions and fibrosis within the duct wall. Further, there is worsening of parenchymal destruction, due to increased intra-ductal pressures, leading to pre-mature activation of pancreatic proenzymes within the gland. Those affected patients clinically present frequent attacks of upper abdominal

pain with radiation to the back. Fibrotic pancreatic parenchyma with irregular duct and multiple calcific depositions is revealed on imaging. The mechanisms responsible for pain in CP include the release of pro-inflammatory cytokines, production of substance P, ischemia of visceral nerve fibres, with development of “pain memory” in the central nervous system which is independent of peripheral nociceptive input.^{1,2}

To reduce the pain due to CP, LPJ is the most common surgical procedure. It includes steps as follows: lay open of the pancreatic duct (PD), clearance of PD calculi, side to side anastomosis between PD and Roux limb of the jejunum along with reunion the jejunum.³ Despite the evidence available for the effectiveness of surgical therapy, the decision for indication, type, and timing of surgical intervention is always debated in patients with

obstructive chronic pancreatitis. Without evidence, some argue against invasive treatment in patients with CP. It is considered that the natural course of disease and placebo effect can be possible explanations for the pain relief seen after surgical treatment.¹

We present this case series of patients who required invasive LPJ procedure for the treatment of chronic calcific pancreatitis and pancreatic ductal dilation. The possible timing of the procedure and category of patients who benefited from this procedure is being defined in this patient group.

CASE SERIES

Sixty-five patients were evaluated for abdominal pain, malabsorption, and weight loss from July 2018 to December 2021. We choose 14 cases of chronic atrophic pancreatitis with ductal calculi and intractable pain not amenable to a conservative line of management for LPJ, based on clinical findings. None had pancreatic head mass as per cross-sectional imaging. Patients with pain and malabsorption, who had less than 8 mm pancreatic duct dilation and who responded to pancreatic enzyme replacement therapy were excluded.

Six weeks post-surgery, only 2 patients had pain, weight loss, and malabsorption, a significant change.

Demographic and clinical details and treatment procedure for these 14 patients are described in Table 1 of the 14, 3 cases can be considered failures since they continued to have either pain, malabsorption, or no weight gain.

Case number 1, a non-alcoholic, male had complaints for more than 10 years. He had CBD dilatation and was a case of chronic calcific pancreatitis (CCP) with PD calculi. He underwent LPJ with choledochojejunostomy. He had uncontrolled diabetes, and a pancreas progressively damaged due to longstanding disease leading to pancreatic burnout. Post-surgery, he continued to have pain and malabsorption and did not gain weight.

Case number 2, a female, with symptoms for more than 5 years, fragile diabetes, CBD dilatation along with CCP with PD calculi (Figure 1). She underwent LPJ with choledochojejunostomy. In her case too, failure could be attributed to a pancreas compromised due to longstanding disease with possible pancreatic burnout.

Case number 7, (Figure 2 and 3), a female with the disease for a little more than 2 years. Despite thorough pre-op workup, no head mass or vascular invasion, and non-malignant intra-op tissue biopsy, the patient developed a malignant pancreatic head mass that was inoperable within one month of surgery. Therefore, the failures were mainly due to impaired pancreas due to chronic disease and not due to failure of the procedure.

Chronic pancreatitis cases, with a short duration of illness, have a better chance of success in surgery. The possible parameters that could lead to success in the surgery are described in Table 2.

For other parameters, findings are not significant possibly due to a small sample, but trends are positive for young, non-diabetics.

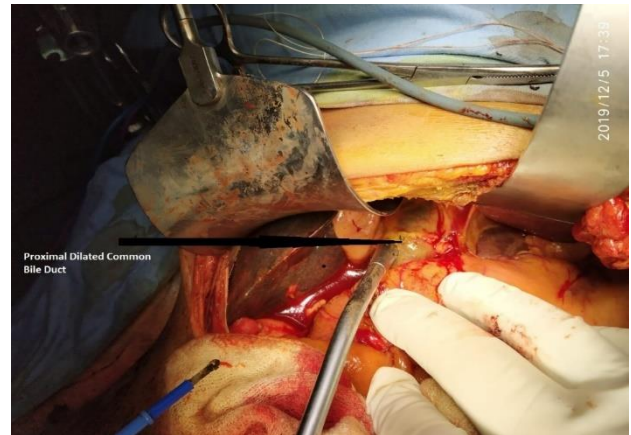


Figure 1: Proximal dilated common bile duct.

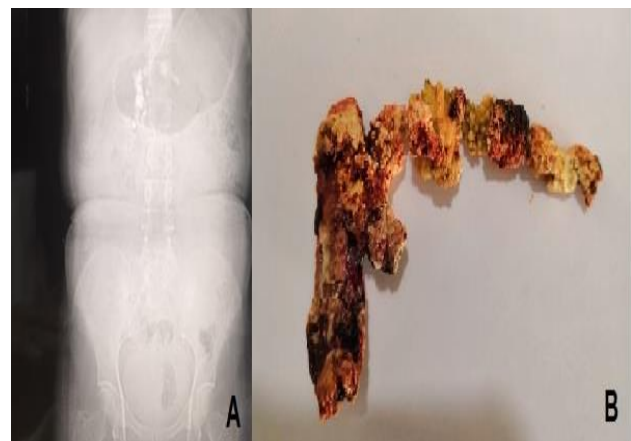


Figure 2 (A and B): Pancreatic ductal stones seen on X-ray abdomen. Pancreatic ductal stones specimen.

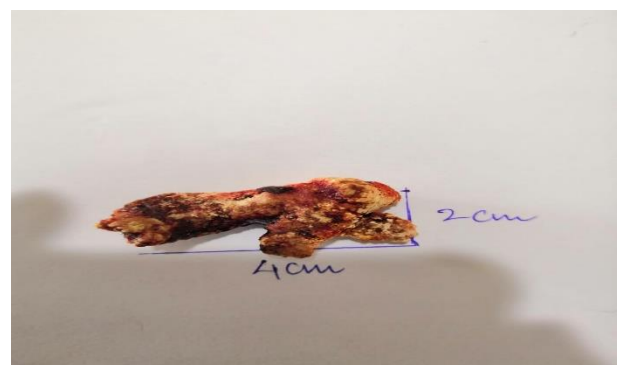


Figure 3: Single large pancreatic intra ductal stone encompassing the head and uncinate process of pancreas.

Table 1: The diagnosis and observations on CT/MRI data.

Case no.	Gender/ age/ DOI/ etiology	Diagnosis	Past history	CT/MRI data	Procedure
1	Male/ 36/ >10 years/ Unknown	Surgical obstructive jaundice due to biliary stricture with CCP	K/ C/ O DM (Pancreatic fragile DM)	Atrophic pancreas Pancreatic duct dilated up to 1.6 cm. No pancreatic mass Upstream dilatation of CBD of 1 cm	LPJ + CJ with Cholecystectomy
2	Female/41/> 5 years/Unknown	Surgical obstructive jaundice due to biliary stricture with CCP	K/C/O DM (Pancreatic fragile DM)	Severe dilatation of IHBR, RDH, IHD, CHD and proximal 2/3 of CBD is seen with abrupt cut off. Pancreas is atrophic with extensive calcification Dilated pancreatic duct measuring 0.7 cm s/o CP (Figure 1).	LPJ + CJ with Cholecystectomy
3	Male/40/ 6 months/ alcoholic	CCP with PD calculi	No DM	Changes of severe CP. Dilated tortuous pancreatic duct (11 mm) with multiple intraductal calculi. Agenesis of left kidney.	LPJ
4	Male/24/ >6 months/ unknown	CCP with PD calculi	No DM	CT-CCP with irregular pancreatic duct Average diameter of 1cm	LPJ
5	Male/41/ since 1 year/ alcoholic	CCP with PD dilated	No DM	Mildly atrophic pancreas with multiple chunky areas of calcification and focally dilated PD in the tail measuring 1 cm 0.6 cm sized obstructive calculus in distal body of pancreas.	LPJ
6	Female/ 42/ >2 years/ unknown	CCP with PD calculi	Newly detected DM	MRCP-CCP and irregular ductal dilatation noted No signs of AP seen. Mild biliary prominence noted. Distal CBD stricture No CBD calculi, calcific gallstones or cholecystitis seen	LPJ + CJ
7	Female/53/2-3 years/ unknown	CCP with PD calculi	No DM	Pancreatic head, body and tail severely atrophic. Multiple calcified calculi are seen in severely dilated PD with PD in the pancreatic head completely filled with ductal stone/s (Figure 2) The portion of PD which can't calculi dilated to 13 mm. Single large pancreatic intra ductal stone encompassing the head and uncinate process of pancreas (Figure 3).	LPJ
8	Male/64/ 2 years/ alcoholic	CCP with PD calculi	K/ C/O DM	Pancreas appears atrophic with PD dilated throughout its course with corrugated and beaded appearance. PD dilated to 10 mm on an avg	LPJ

Continued.

Case no.	Gender/ age/ DOI/ etiology	Diagnosis	Past history	CT/MRI data	Procedure
9	Female/53/> 1 year/ unknown	CCP with PD Calculi	No DM	CCP with PD dilated up to 10 mm and multiple calculi in the PD	LPJ
10	Male/51/ > 1 year/ alcoholic	CCP with PD calculi with duodenal stricture	No DM	Atrophic pancreas with PD dilated up to 1.2 cm. Duodenal stenosis at D2 with gross dilatation of D1 and stomach	LPJ + Gastro-jejunostomy
11	Male/38/ > 5 years/ alcoholic	CCP with PD calculi	K/C/O DM (Pancreatic fragile DM)	CCP with PD dilated up to 13 mm and multiple calculi in the PD	LPJ
12	Male/17/ 2 years/ alcoholic	CCP with PD calculi	No DM	CCP with PD dilated up to 17 mm and multiple calculi in the PD	LPJ
13	Male/19/ 1 year/ unknown	CCP with PD dilated due to proteinaceous soft calculi	No DM	MRCP-CCP and ductal dilatation with calculi noted. CECT: PD dilated but no lumen opacifying calculi seen may be suggestive soft proteinaceous calculi seen only on MRCP. PD is about 13 mm in diameter	LPJ
14	Female/22/2 years/ unknown	CCP with PD calculi with GB sludge	NO DM	MRCP-CCP and irregular ductal dilation noted.	LPJ with cholecystectomy

AP-Acute pancreatitis, CBD-Common bile duct, CCP-Chronic calcific pancreatitis, CJ-Choledocho-jejunostomy, DOI-Duration of illness, PD-Pancreatic ductal.

Table 2: The possible parameters that could lead to success in surgery.

Parameters	Success	Failure	Chi sq.	P value
Diabetes status				
Diabetic	3	2	1.59	<0.1
Non diabetic	8	1		
Alcohol status				
Alcoholic	5	0	2.418	<0.25
Non alcoholic	3	1		
Unknown	3	2		
Age (years)				
15-30	4	0	1.6262	<0.25
31-50	4	2		
>51	3	1		
Duration of illness (years)				
6 months to 2	7	0	5.585	<0.05
2-5	3	1		
>5	1	2		
Gender				
Male	8	1	1.593	<0.1
Female	3	2		
MRI findings				
CBD dilatation	0	2	8.52	<0.002
No CBD dilatation	10	1		

DISCUSSION

This case series documents 14 cases of chronic atrophic pancreatitis with ductal calculi and intractable pain not amenable to a conservative line of management who underwent LPJ. On retrospective analysis of these operated cases, we noticed that some factors might affect success of the surgery. Patients with a shorter duration of illness and without dilatation of common bile duct on cross-sectional imaging modalities are more likely to have a successful surgery. There was a similar possibility for non-diabetics and young patients but we fell short on sample size.

The optimal time of surgical intervention is still under debate. While some believe that early operative duct decompression may prevent further damage, others have noticed progressive functional impairment despite surgery. D'Haese et al conclude that early intervention is the key to success, similar to our finding that patients with a shorter duration of illness fared better post-surgery.⁴ Bouwense et al go a step further and conclude that surgery should be attempted early rather than go the stepwise approach of medical therapy followed by endoscopy and finally surgery.⁵ Islam et al also note that early surgery can provide good remission of abdominal pain and slow the progression of chronic pancreatitis.⁶ Many authors further vouch that early surgery will also help save some endocrine functions of the pancreas.^{5,7,8}

The three failures were however not related to the surgical procedure. Two cases that had fragile diabetes and biliary disease required choledochojunostomy along with LPJ. Failure in these cases could be alluded to functional damage of the pancreas due to chronic disease.⁵ Islam SR et al states that patients with CCP and diabetes are unlikely to have favourable outcome even after decompressible surgery.⁶ The third case which failed turned out to be a malignancy. Tattersall et al have opined that in the case of chronic pancreatitis of autoimmune etiology, it is difficult to distinguish from pancreatic cancer on imaging alone, while Dick et al mention that chronic non-alcoholic pancreatitis cases have an increased risk of developing pancreatic carcinoma.^{9,10}

Since two out of the three failed cases underwent choledochojunostomy along with planned LPJ, one might be tempted to conclude that failure could also be due to the complexity of the surgery. However, in this case series, there were two more cases with complex surgeries that had a successful recovery.

Case number 10, Alcoholic, had duodenal stricture along with a diagnosed case of CCP with PD calculi. He underwent LPJ with gastrojejunostomy. Case number 14, a young female who had CCP with dilated PD and sludge in the gall bladder. She underwent LPJ with cholecystectomy. Both had excellent postoperative results with weight gain, no steatorrhoea, malabsorption,

and, pain, further supporting that patient-related parameters are more responsible for the success than complexity of the surgery.

CONCLUSION

This case series indicates that one can resort to LPJ in cases that do not respond to medical therapy, continue to suffer from pain, malabsorption, and weight loss. Patients with a shorter duration of illness and without dilatation of common bile duct on cross-sectional imaging modalities are more likely to have a successful surgery. LPJ is a relatively safe procedure that provides good pain relief with low postoperative morbidity. It prevents further exacerbations and maintains appropriate pancreatic exocrine and endocrine functions.

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REFERENCES

1. Issa Y, Boermeester MA. Management of chronic pancreatitis: more pain than gain? *BJS*. 2021;108:1397-9
2. Kim YH, Jang SI, Rhee K, Lee DK. Endoscopic Treatment of Pancreatic Calculi. *Clin Endosc*. 2014;47:227-35.
3. Nag HH, Arvinda PS, Sachan A, Saluja SS, Sachdeva S, Chandra S. Laparoscopic Lateral Pancreatico-jejunostomy-the Technique and Early Experience. *Indian J Surg*. 2019;81:51-6.
4. D'Haese JG, Cahen DL, Werner J. Current Surgical Treatment Options in Chronic Pancreatitis. *Pancreapedia: Exocrine Pancreas Knowledge Base Version 1.0*. 2016;26.
5. Bouwense SAW, Kempeneers MA, Van Santvoort HC, Boermeester MA, Van Goor H, Besselink MG. Surgery in Chronic Pancreatitis: Indication, Timing and Procedures. *Visc Med*. 2019;35:110-8.
6. Islam SR, Rahman S, Talukdar S, Sarkar SA, Poran S. Lateral Pancreato-Jejunostomy in Chronic Pancreatitis: An appraisal of 32 cases. *Arch Surg Clin Res*. 2020;4:001-5.
7. Sieleznoff I, Malouf A, Salle E, Brunet C, Thirion X, Sastre B. Long Term Results of Lateral Pancreaticojejunostomy for Chronic Alcoholic Pancreatitis. *Eur J Surg*. 2000;166:58-64.
8. Sahoo A, Swain N, Mohanty A. Diabetes Status After Lateral Pancreaticojejunostomy and Frey's

Procedure in Chronic Calcific Pancreatitis: An Observational Study. *Cureus*. 2015;14(2):e21855.

9. Tattersalle SJN, Apte MV, Wilson JS. A fire inside: current concepts in chronic pancreatitis. *Intern Med J*. 2008;38(7):592-8.
10. Kangas-Dick A, Khan U, Awoniyi O, Waqar S, Tun NN, Viswanathan K et al. A Case of Chronic

Calcific Nonalcoholic Pancreatitis. *Case Reports in Gastrointestinal Med*. 2016;2963681.

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