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Original Article

Relevance of Lateral Pancreaticojejunostomy for Chronic Pancreatitis

Dr. Boddeda Jogendra[1], Dr. Vegi Trikal Prajval Mahidhar[2], Dr. Sarika Srihari[3]

[1,2,3]*Assistant Professor, Department of General surgery, Andhra Medical College,Visakhapatnam*

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Corresponding Author:

Dr. Vegi Trikal Prajval Mahidhar
Assistant Professor, Department of General surgery, Andhra Medical College,Visakhapatnam

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ABSTRACT

Background: Chronic pancreatitis is a progressive inflammatory disorder characterized by irreversible structural damage to the pancreas, resulting in chronic abdominal pain and progressive loss of endocrine and exocrine function. In patients with a dilated main pancreatic duct who fail conservative treatment, lateral pancreaticojejunostomy (LPJ) is an established surgical drainage procedure aimed at relieving ductal hypertension and improving quality of life. The present study evaluated the short-term outcomes of LPJ in patients with chronic pancreatitis.

Methods: This prospective observational study included 57 consecutive patients with chronic pancreatitis and a dilated main pancreatic duct (≥6 mm) who underwent LPJ at the Department of General Surgery, King George Hospital, Visakhapatnam, between May 2020 and May 2025. Clinical outcomes were assessed at 2, 4, and 6 months postoperatively. The primary outcome was pain relief, while secondary outcomes included analgesic requirement, endocrine and exocrine pancreatic function, return to paid work, postoperative morbidity, and mortality. Pain was evaluated using the Visual Analogue Scale (VAS), exocrine function by fecal elastase levels and clinical assessment, and endocrine function by HbA1c levels and insulin requirement.

Results: All 57 patients presented with chronic abdominal pain preoperatively. Significant postoperative pain relief was observed in 56.1%, 68.4%, and 64.9% of patients at 2, 4, and 6 months, respectively. Regular analgesic use decreased markedly from 86.0% before surgery to 12.4% at 6 months. Improvement in exocrine pancreatic function was observed in 26.4%, 19.3%, and 38.6% of patients at 2, 4, and 6 months, respectively. Reduced insulin requirements were noted in 15.8% of insulin-dependent patients at 4 months and 45.6% at 6 months, while HbA1c improved in 17.1% and 42.1% of patients at the respective follow-up visits. Overall, 63.1% of patients returned to their previous occupations within 6 months. Rehospitalization occurred in nine patients, reoperation was required in six patients, and no postoperative mortality was recorded.

Conclusion: Lateral pancreaticojejunostomy is a safe and effective surgical procedure for carefully selected patients with chronic pancreatitis and a dilated pancreatic duct. The procedure provides substantial short-term pain relief, significantly reduces analgesic dependence, facilitates functional recovery and return to work, and demonstrates acceptable morbidity with zero mortality. Although improvements in endocrine and exocrine function are variable, LPJ remains an important surgical option for symptomatic patients in whom conservative management has failed.

Keywords: *Chronic pancreatitis; Lateral pancreaticojejunostomy; Puestow procedure; Pain relief; Exocrine insufficiency; Endocrine function; Pancreatic duct drainage.*

INTRODUCTION

Chronic pancreatitis (CP) is a progressive fibro-inflammatory disorder of the pancreas characterized by irreversible destruction of pancreatic parenchyma, progressive fibrosis, ductal distortion, calcification, and gradual loss of both

exocrine and endocrine function. Unlike acute pancreatitis, the structural changes in CP are permanent and often result in chronic abdominal pain, malabsorption, diabetes mellitus, recurrent hospitalizations, and reduced quality of life. The disease predominantly affects individuals in the productive years of life, imposing a significant socioeconomic burden due to frequent healthcare utilization and loss of work productivity. Although alcohol consumption remains the leading etiological factor worldwide, other causes such as genetic mutations, tropical pancreatitis, autoimmune disorders, obstructive pancreatic duct lesions, metabolic abnormalities, smoking, and idiopathic factors also contribute significantly to disease development. In tropical countries such as India, tropical chronic pancreatitis remains an important clinical entity affecting younger individuals with rapid progression to pancreatic insufficiency. Early recognition and appropriate intervention are essential to prevent disease progression and improve long-term outcomes.[1–4]

The pathogenesis of chronic pancreatitis is complex and multifactorial. Repeated episodes of pancreatic inflammation activate pancreatic stellate cells, leading to excessive collagen deposition, fibrosis, ductal strictures, and calcification. Progressive obstruction of the main pancreatic duct results in increased intraductal pressure, ischemia, neural inflammation, and persistent abdominal pain, which is the most disabling symptom of the disease. Continuous inflammatory injury ultimately destroys acinar tissue responsible for digestive enzyme secretion and islet cells responsible for insulin production, leading to exocrine pancreatic insufficiency and pancreatogenic diabetes mellitus. Chronic inflammation also causes structural changes that predispose patients to recurrent acute exacerbations, pancreatic pseudocysts, biliary obstruction, duodenal stenosis, vascular complications, and an increased risk of pancreatic carcinoma.[5–8]

Pain is the hallmark symptom of chronic pancreatitis and significantly impairs patients' physical, psychological, and social well-being. The mechanism of pain is multifactorial, involving ductal hypertension, neural hypertrophy, perineural inflammation, pancreatic ischemia, central sensitization, and ongoing inflammatory injury. Initially, pain may be intermittent but gradually becomes persistent and debilitating, often requiring repeated hospital admissions and prolonged analgesic therapy. Long-term opioid dependence has emerged as a major concern, emphasizing the need for definitive treatment strategies that address the underlying pathology rather than merely controlling symptoms. In addition to pain, patients commonly present with steatorrhea, chronic diarrhea, malnutrition, weight loss, fat-soluble vitamin deficiencies, impaired glucose tolerance, and diabetes mellitus due to progressive pancreatic insufficiency.[9–12]

Diagnosis of chronic pancreatitis requires a combination of clinical assessment, laboratory investigations, and radiological imaging. Serum amylase and lipase levels may be normal in advanced disease; therefore, imaging plays a pivotal role. Ultrasonography serves as an initial screening modality, whereas contrast-enhanced computed tomography demonstrates pancreatic calcifications, ductal dilatation, glandular atrophy, and inflammatory changes. Magnetic resonance cholangiopancreatography provides detailed visualization of the pancreatic ductal anatomy without contrast administration, while endoscopic ultrasound detects subtle parenchymal and ductal abnormalities in early disease. Functional assessment includes fecal elastase estimation for exocrine insufficiency and HbA1c or fasting blood glucose measurement for endocrine dysfunction. These investigations facilitate patient selection for appropriate therapeutic intervention.[13–16]

Management of chronic pancreatitis is multidisciplinary and aims to relieve pain, preserve pancreatic function, improve nutritional status, and prevent complications. Conservative treatment includes complete abstinence from alcohol and smoking, dietary modification, pancreatic enzyme replacement therapy, analgesics, antioxidants, insulin therapy for diabetes, and nutritional supplementation. Endoscopic interventions such as pancreatic duct stenting, sphincterotomy, stone extraction, and extracorporeal shock-wave lithotripsy may provide temporary relief in selected patients with ductal obstruction. However, repeated endoscopic procedures frequently fail to provide durable pain relief, particularly in patients with markedly dilated pancreatic ducts and advanced structural disease. Surgical intervention remains the most effective option in carefully selected patients, offering superior long-term pain relief and improved quality of life compared with prolonged endoscopic therapy.[17–21]

Several surgical procedures have been developed for chronic pancreatitis depending on the anatomical distribution of disease. Drainage procedures, resection procedures, and hybrid procedures are selected according to pancreatic morphology and disease severity. Longitudinal lateral pancreaticojejunostomy, commonly known as the Partington-Rochelle modification of the Puestow procedure, is considered the procedure of choice for patients with a dilated main pancreatic duct measuring 6 mm or more without an inflammatory mass in the pancreatic head. The procedure involves longitudinal opening of the pancreatic duct throughout its length followed by side-to-side anastomosis with a Roux-en-Y jejunal limb, thereby decompressing the entire ductal system. This effectively reduces intraductal pressure, relieves pain, preserves pancreatic parenchyma, and minimizes operative morbidity. Compared with pancreatic resection, LPJ is technically simpler, preserves pancreatic tissue, and maintains endocrine and exocrine function to a greater extent.[22–26]

Numerous clinical studies have demonstrated that LPJ provides excellent pain relief in approximately 70–90% of appropriately selected patients, with low operative mortality and acceptable morbidity. Several reports have also shown improvement in nutritional status, reduction in analgesic dependence, preservation of pancreatic function, and enhanced quality of life following surgery. Nevertheless, the degree of endocrine and exocrine recovery remains variable because

pancreatic fibrosis often continues to progress despite successful ductal decompression. Long-term outcomes depend largely on disease duration, extent of fibrosis, lifestyle modification, alcohol abstinence, smoking cessation, nutritional rehabilitation, and regular follow-up. Contemporary evidence increasingly supports early surgical intervention rather than delayed surgery after prolonged unsuccessful conservative or endoscopic management, as earlier intervention may better preserve pancreatic function and improve long-term outcomes.[27–30]

Although LPJ has been practiced for several decades, there remains limited prospective data from Indian tertiary care centres evaluating short-term functional outcomes, endocrine and exocrine recovery, postoperative morbidity, and return to work. Regional differences in patient characteristics, nutritional status, etiology, and healthcare access necessitate further evaluation of surgical outcomes in the Indian population. Therefore, the present observational study was undertaken to assess the effectiveness of lateral pancreaticojejunostomy in patients with chronic pancreatitis by evaluating postoperative pain relief, reduction in analgesic requirement, changes in endocrine and exocrine pancreatic function, postoperative complications, and return to normal occupational activity. The findings of this study are expected to contribute additional evidence regarding the role of LPJ as an effective and safe surgical procedure for the management of chronic pancreatitis in patients with a dilated main pancreatic duct.

MATERIALS AND METHODS

Study Design

This was a hospital-based prospective observational study conducted to evaluate the effectiveness of lateral pancreaticojejunostomy (LPJ) in patients with chronic pancreatitis presenting with a dilated main pancreatic duct.

Study Setting

The study was carried out in the Department of General Surgery, King George Hospital, Visakhapatnam, Andhra Pradesh, India.

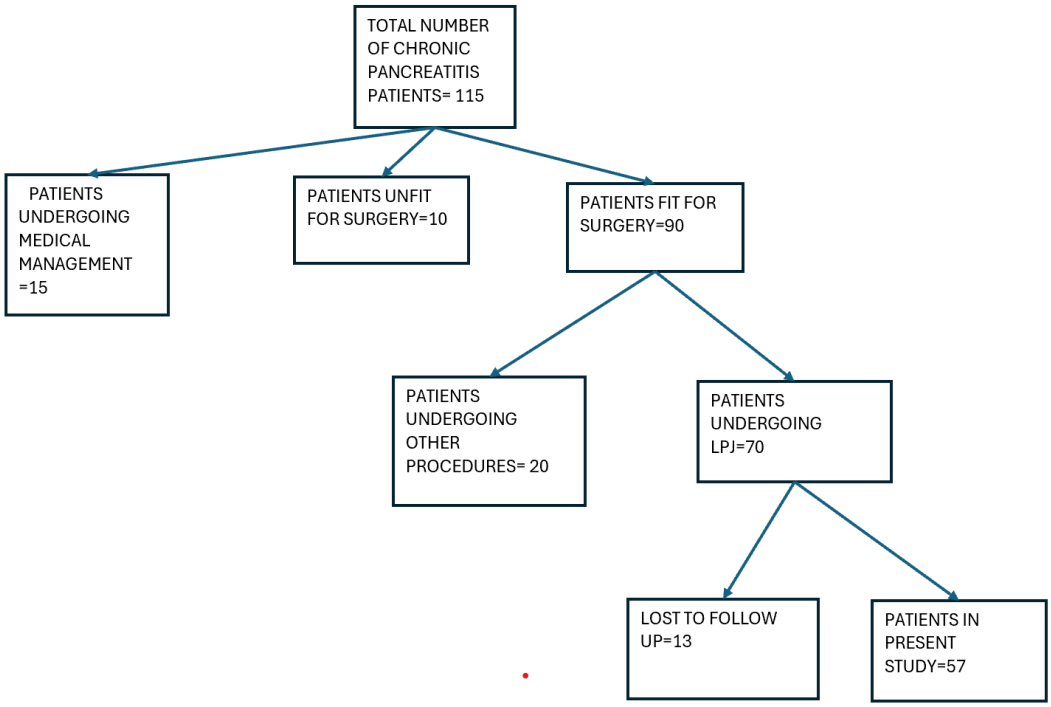
Study Duration

The study was conducted over a period of five years, from **25 May 2020 to 24 May 2025**.

Study Population

A total of **57 consecutive patients** diagnosed with chronic pancreatitis who fulfilled the eligibility criteria and underwent lateral pancreaticojejunostomy during the study period were included.

Sample Size



Sampling technique-
Consecutive sampling technique

Inclusion criteria-

1. Evidence of dilated main pancreatic duct 6 mm or more in ultrasound or MRCP.
2. Failed medical treatment.

Exclusion criteria-

1. Critically ill patient.
2. Pancreatic malignancy.
3. Diabetes mellitus that could not be controlled even after proper insulin therapy.
4. Age above 65 years
5. Patients with pancreatic psuedocyst ,duodenal obstruction and portal hypertension.
6. Patients did not give consent.
7. Patients lost to follow up.

DATA COLLECTION PROCEDURE

After the approval of the institution, we followed 57 patients who underwent lateral pancreaticojejunostomy for pancreatic duct dilatation. Data including demographics, diagnostic studies, operative details, complications and outcomes and follow up after 2,4,6 months were analysed, main outcome measures that were taken into consideration are relief of pain, reduction in use of analgesics, exocrine insufficiency, endocrine insufficiency and return to paid work. Exocrine function is measured objectively using fecal elastase and subjectively by symptomatic relief from anorexia, nausea and improvement in weight. Endocrine function is measured objectively by measuring HbA1c levels and subjectively by reduction in dosage of insulin. Improvement in pain is assessed by visual analogue scale.

Preoperative Evaluation

All patients underwent detailed clinical history, physical examination, routine hematological and biochemical investigations, liver and renal function tests, coagulation profile, serum amylase, serum lipase, fasting blood glucose, and HbA1c estimation. Radiological assessment included abdominal ultrasonography and contrast-enhanced CT scan or MRCP to evaluate pancreatic duct diameter, ductal calculi, calcification, and associated pancreatic pathology. Exocrine pancreatic function was assessed using fecal elastase estimation and clinical assessment of steatorrhea, weight loss, and nutritional status.

Surgical Procedure

All patients underwent **longitudinal lateral pancreaticojejunostomy (Partington–Rochelle modification of the Puestow procedure)** under general anesthesia. After adequate exposure of the pancreas, the main pancreatic duct was identified and opened longitudinally from the head to the tail of the pancreas. Intraluminal calculi were removed whenever present. A Roux-en-Y jejunal limb was fashioned, and a side-to-side pancreaticojejunostomy was performed using absorbable sutures, ensuring complete decompression of the pancreatic duct. Hemostasis was secured, abdominal drains were placed as required, and the abdomen was closed in layers.

Postoperative Follow-up

Patients were followed at **2 months, 4 months, and 6 months** after surgery. Clinical assessment included evaluation of pain relief, analgesic requirement, nutritional status, endocrine function, exocrine function, postoperative complications, and return to normal occupational activity.

Outcome Measures

Primary Outcome

- Improvement in abdominal pain assessed using the **Visual Analogue Scale (VAS).**

Secondary Outcomes

- Reduction in regular analgesic requirement.
- Improvement in exocrine pancreatic function assessed by fecal elastase levels and clinical symptoms.
- Improvement in endocrine pancreatic function assessed by HbA1c levels and reduction in insulin requirement.
- Return to paid employment.
- Postoperative morbidity including wound infection, recurrent pain requiring readmission, reoperation, and mortality.

Data Collection

Patient demographic characteristics, clinical presentation, laboratory investigations, radiological findings, operative details, postoperative complications, and follow-up data were recorded using a structured data collection proforma.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using **IBM SPSS Statistics** software (Version 26.0 or later). Continuous variables were expressed as mean ± standard deviation, whereas categorical variables were presented as

frequencies and percentages. Comparisons between preoperative and postoperative outcomes were performed using the paired t-test or Wilcoxon signed-rank test for continuous variables and the Chi-square test or Fisher's exact test for categorical variables, as appropriate. A **p-value <0.05** was considered statistically significant.

Ethical Considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of King George Hospital, Visakhapatnam. Written informed consent was obtained from all participants before enrollment. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki, and patient confidentiality was maintained throughout the study.

RESULTS

A total of **57 patients** with chronic pancreatitis and a dilated main pancreatic duct underwent lateral pancreaticojejunostomy (LPJ) during the study period. All patients completed the scheduled follow-up assessments at 2, 4, and 6 months after surgery.

1.Pain

Out of 57 patients pain complaint was present in 100% of the patients.

Pain being the major symptom bringing the patient to medical help, it is greatly relieved with lateral pancreaticojejunostomy , with a reduction of pain noticed in 56.13% of patients in the first 2 months of surgery, 68.4% of patients after 4 months of surgery and 64.9% of patients in 6 months after surgery . Long term sustainance of pain relief is questionable probably due to the progression in disease process , which is supported by a drastic rise in pain intensity at 6th month follow up in 19.3% cases.

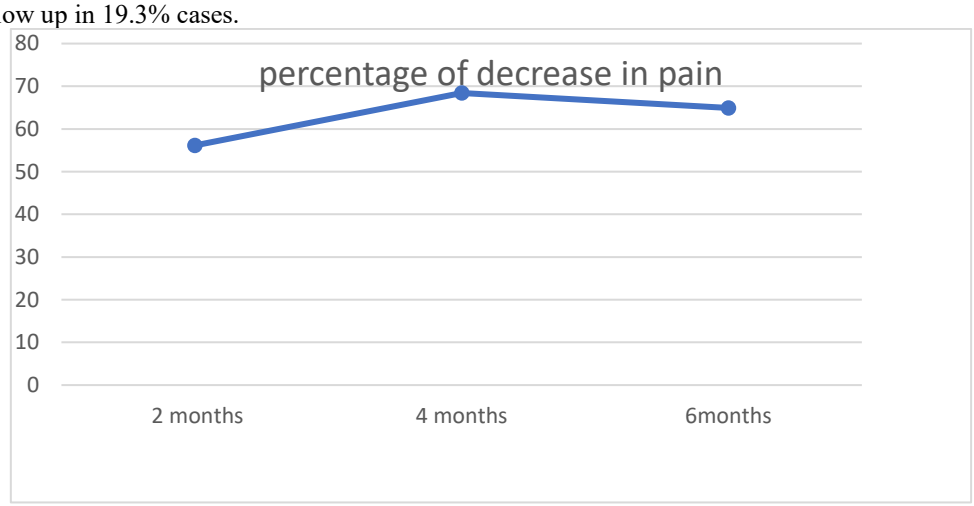


Fig 1:graph showing percentage of decrease in pain in patients who underwent LPJ over a course of few months

Analgesic use:

Pre-op regular use: 86%

Post-op at 6 months: 12.4%

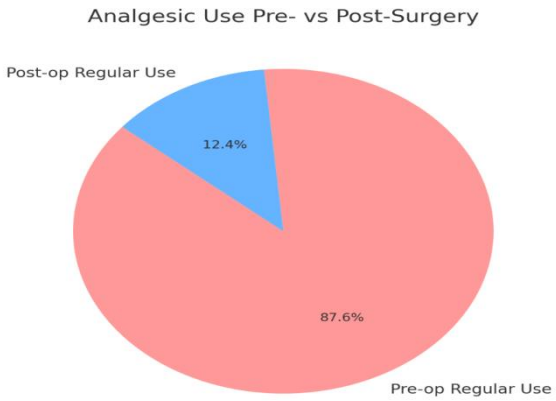


Fig 2:Pie chart showing reduction in analgesic usage following LPJ

Pie chart visualizing the reduction in regular analgesic use from 86% preoperatively to 12.4% at 6 months postoperatively following LPJ surgery. This dramatic reduction underscores the clinical efficacy of LPJ in achieving substantial pain relief, decreasing patient reliance on medications.

3.Exocrine Function:

Out of 57 patients with chronic pancreatitis, moderate to severe exocrine dysfunction was present in 50% of the patients.

Time Point	Improved	Deteriorated	No Change
2 months	26.4%	0	0
4 months	19.3%	15.8%	0
6 months	38.6%	42.1%	19.3%

Exocrine pancreatic function following Lateral Pancreaticojejunostomy (LPJ) at three critical postoperative follow-up intervals: 2 months, 4 months, and 6 months.

At 2 Months Post-LPJ:

- Out of 57 patients ,26.4% of patients demonstrated improvement in exocrine function.
- There were no cases reported of deterioration or no change explicitly recorded at this time point.
- Early post-op outcomes appear favourable, possibly reflecting the initial success of ductal decompression and relief from inflammatory sequelae.

At 4 Months Post-LPJ:

- Out of 57 patients ,19.3% showed improvement
- And 15.8% of patients showed deterioration in exocrine function.
- No cases were marked as unchanged.
- A decline in improvement suggests early signs of disease progression or suboptimal postoperative care (e.g., continued alcohol use or poor compliance with enzyme replacement).

At 6 Months Post-LPJ:

- Improvement rose again to 38.6%, indicating potential late gains in pancreatic function recovery or effective adjunct management.
- However, 42.1% showed deterioration, the highest at any time point, and 19.3% remained unchanged.
- This mixed picture emphasizes the biphasic trajectory in chronic pancreatitis—initial symptomatic relief followed by possible deterioration if underlying risk factors (alcohol use, malnutrition, non-compliance) aren't addressed.

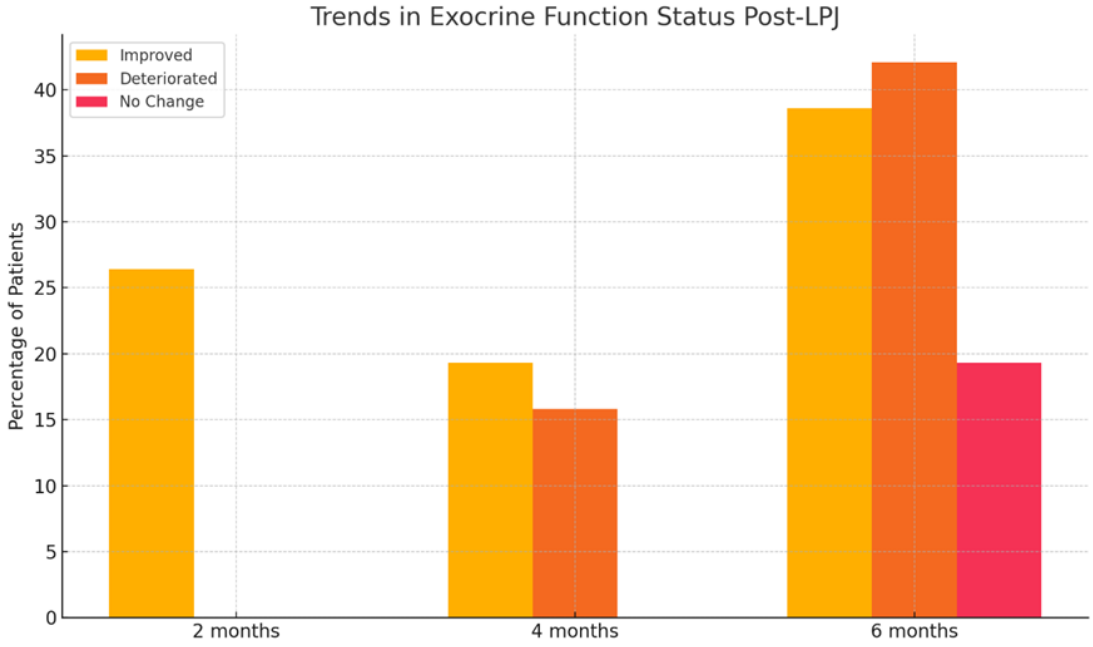


Fig3: A graphical representation of trends in exocrine function status post LPJ

4.Endocrine function:

Out of the 57 patients, endocrine dysfunction was present in 57.8% of the patients.

Metric	Pre-op	4 Months	6 Months
Patients on insulin	27	↓ in 15.8%	↓ in 45.6%

New-onset diabetes	0	0	2
HbA1c Improvement	0	17.1%	42.1%

1. Insulin Dependency

- Pre-op: 27 patients were insulin-dependent.
- 4 Months: 15.8% of these showed reduced insulin requirements.
- 6 Months: Reduction in insulin need expanded to 45.6%, suggesting a delayed but significant improvement in endocrine function.

2. New-Onset Diabetes

- None of the patients had new-onset diabetes preoperatively or at 4 months.
- By 6 months, 2 patients developed diabetes, underscoring the progressive potential of the disease despite surgical relief.

3. HbA1c Improvement

- 17.1% showed improvement by 4 months.
- This improved further to 42.1% at 6 months, reflecting better glycemic control over time, possibly due to reduced ductal pressure and inflammation.

5.Return to Work and Well-being:

Metric	Percentage (%)
Returned to Pre-op Work	63.1%
Rated Health as "Good"	40.4%
Rated Health as "Fair"	33.3%
Rated Health as "Poor"	26.3%

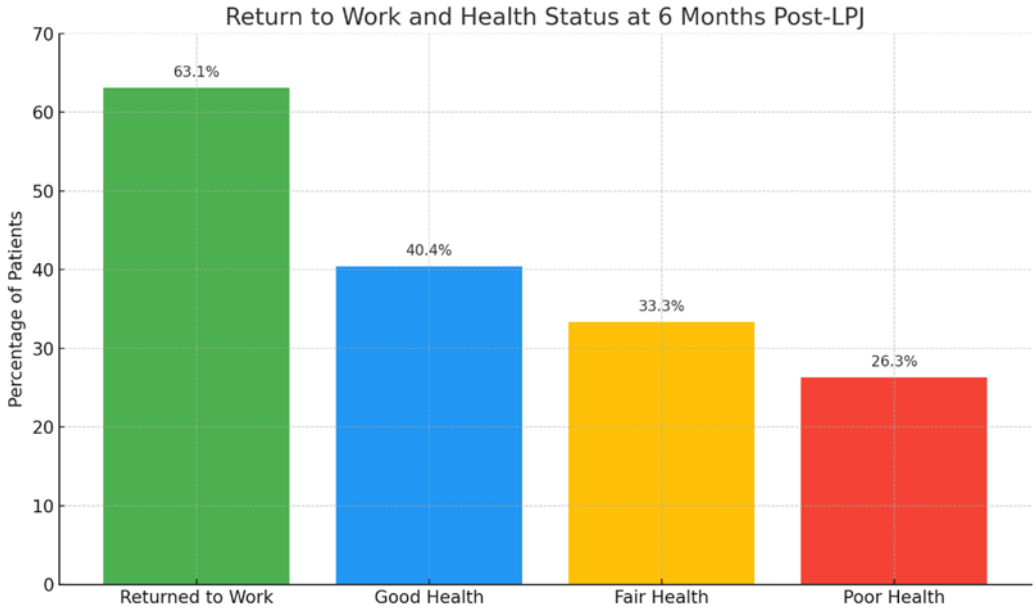


Fig 4 : A graphical representation of population trends at 6months Post-LPJ

Recovery outcomes at 6 months:

- 63.1% of patients successfully returned to their previous occupations, indicating significant functional recovery.
- Subjective well-being ratings show a positive trend:
  - 40.4% felt in good health
  - 33.3% reported a fair status
  - Only 26.3% still felt in poor health

Return to employment and subjective well-beingstrongly supports the utility of LPJ in restoring functional independence and quality of life.

6.Postoperative Morbidity

Complication Type	Number of Patients
Re-hospitalization (7 pain, 2 infection)	9
Reoperation	6
Mortality	0

postoperative morbidity events in patients who underwent LPJ:

- Re-hospitalization occurred in 9 patients:
  - 7 for pain recurrence
  - 2 for wound infections
- Reoperation was required in 6 cases, reflecting a modest revision burden.
- Importantly, there were zero postoperative deaths, confirming the safety profile of LPJ in this cohort.

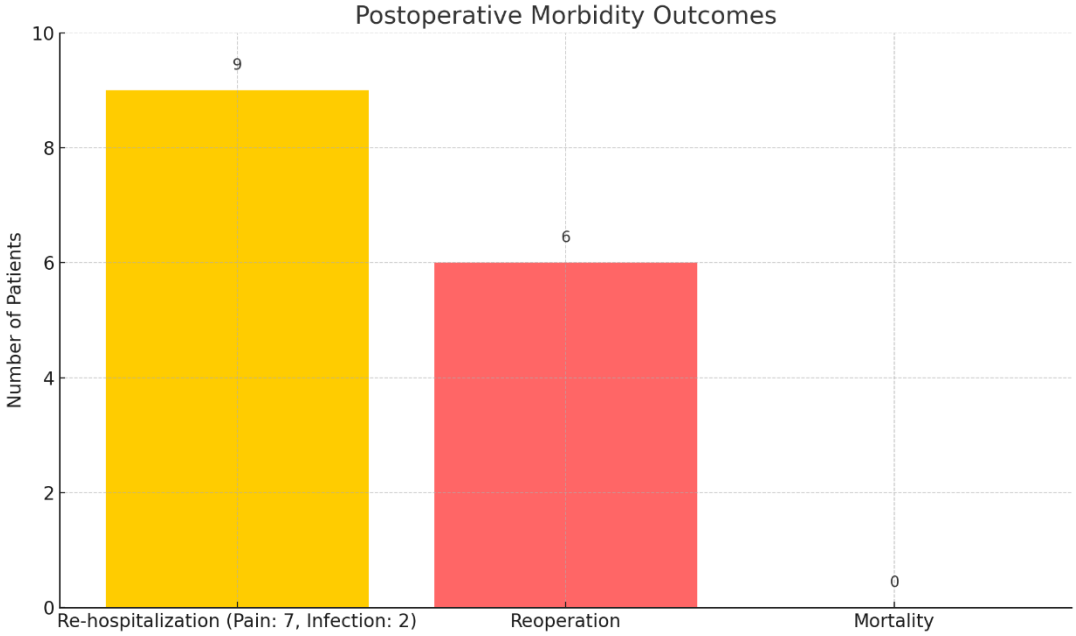


Fig 5 : A graphical representation of postoperative morbidity outcomes

Pain Relief

Abdominal pain was the presenting complaint in all 57 patients (100%) before surgery. A progressive reduction in pain severity was observed during postoperative follow-up. At 2 months, pain relief was achieved in **32 patients (56.1%)**, which further improved to **39 patients (68.4%)** at 4 months. At 6 months, **37 patients (64.9%)** continued to experience significant pain relief. Although a slight decline in sustained pain relief was observed at the final follow-up, the overall reduction in pain remained clinically significant. Regular analgesic use decreased markedly from **86.0%** before surgery to **12.4%** at 6 months, indicating a substantial reduction in dependence on pain medication.

Exocrine Pancreatic Function

Preoperative assessment demonstrated moderate-to-severe exocrine pancreatic insufficiency in approximately **50%** of patients. At the 2-month follow-up, **15 patients (26.4%)** showed improvement in exocrine pancreatic function. At 4 months, improvement was observed in **11 patients (19.3%)**, while **9 patients (15.8%)** demonstrated deterioration. By 6 months, improvement increased to **22 patients (38.6%)**, whereas **24 patients (42.1%)** showed deterioration and **11 patients (19.3%)** had no significant change. These findings indicate that although LPJ provides initial improvement in pancreatic exocrine function, long-term outcomes are influenced by the progressive nature of chronic pancreatitis.

Endocrine Pancreatic Function

Endocrine dysfunction was present in **33 patients (57.8%)** before surgery, with **27 patients** requiring insulin therapy. At 4 months, **15.8%** of insulin-dependent patients required a reduced insulin dosage, increasing to **45.6%** by 6 months. Improvement in glycaemic control, assessed by HbA1c, was observed in **17.1%** of patients at 4 months and **42.1%** at 6 months. Two patients developed new-onset diabetes mellitus during the follow-up period.

Functional Recovery and Quality of Life

Functional recovery following surgery was satisfactory. At the 6-month follow-up, **36 patients (63.1%)** had resumed their previous occupations. Subjective assessment of overall health revealed that **23 patients (40.4%)** rated their health as good, **19 patients (33.3%)** reported fair health, and **15 patients (26.3%)** considered their health to be poor. These findings demonstrate a significant improvement in quality of life and functional status following LPJ.

Postoperative Morbidity

Postoperative complications were minimal. **Nine patients (15.8%)** required rehospitalization, including **seven** because of recurrent abdominal pain and **two** because of surgical-site infection. **Six patients (10.5%)** underwent reoperation during follow-up. Importantly, **no postoperative mortality** was observed in the study cohort, confirming the safety of the procedure.

Overall Outcome

The present study demonstrated that lateral pancreaticojejunostomy is an effective surgical procedure for patients with chronic pancreatitis and a dilated pancreatic duct. The operation resulted in substantial postoperative pain relief, significant reduction in analgesic requirement, improvement in endocrine and exocrine pancreatic function in a considerable proportion of patients, satisfactory return to occupational activity, and low postoperative morbidity without mortality during the 6-month follow-up period.

DISCUSSION

Chronic pancreatitis is a progressive fibro-inflammatory disease characterized by irreversible destruction of pancreatic parenchyma, ductal abnormalities, chronic pain, and gradual loss of endocrine and exocrine function. The principal aim of treatment is to relieve pain, preserve pancreatic function, improve nutritional status, and enhance the patient's quality of life. In patients with a dilated main pancreatic duct, lateral pancreaticojejunostomy (LPJ) remains one of the most effective surgical drainage procedures because it relieves ductal hypertension while preserving pancreatic tissue. Numerous studies have demonstrated that early surgical intervention provides superior long-term outcomes compared with prolonged conservative or repeated endoscopic management.[1,4,5,17,18]

In the present study, all 57 patients presented with chronic abdominal pain before surgery, emphasizing that pain remains the predominant clinical manifestation of chronic pancreatitis. Following LPJ, significant pain relief was achieved in 56.1% of patients at 2 months, 68.4% at 4 months, and 64.9% at 6 months, accompanied by a marked reduction in regular analgesic use from 86% preoperatively to only 12.4% at six months. These findings are consistent with the observations of Kalady et al., Adams et al., and Sudo et al., who reported sustained pain relief in 70–90% of appropriately selected patients undergoing LPJ.[24,25,28] The improvement in pain is primarily attributed to effective decompression of the dilated pancreatic duct, resulting in reduction of intraductal pressure, neural inflammation, and pancreatic ischemia.[20–25]

Preservation of pancreatic exocrine function remains an important therapeutic objective because progressive fibrosis ultimately leads to malabsorption, steatorrhea, and nutritional deficiencies. In the present study, improvement in exocrine pancreatic function was observed in 26.4% of patients at 2 months and 38.6% at 6 months, although deterioration occurred in a proportion of patients during follow-up. These findings indicate that while surgical decompression improves pancreatic drainage and temporarily enhances glandular function, progression of the underlying disease continues in some individuals. Similar observations have been reported by Jalleh and Williamson, Sudo et al., and Domínguez-Muñoz, who demonstrated that exocrine recovery following surgery depends largely on the severity of pre-existing fibrosis, disease duration, nutritional status, and postoperative lifestyle modification.[11,27,28]

Endocrine dysfunction is another major consequence of chronic pancreatitis resulting from progressive destruction of the pancreatic islets. In the present study, reduction in insulin requirement and improvement in HbA1c were observed during postoperative follow-up, suggesting partial recovery of endocrine function after ductal decompression. Nevertheless, two patients developed new-onset diabetes mellitus, indicating that surgery cannot completely halt disease progression. Similar findings have been reported in previous studies, which demonstrated stabilization rather than complete restoration of endocrine function following pancreatic drainage procedures.[5,7,19,27] Early surgical intervention before irreversible pancreatic destruction may therefore contribute to better preservation of endocrine reserve.

Functional recovery is an important indicator of successful treatment because chronic pancreatitis frequently affects young and economically productive individuals. In the present study, 63.1% of patients returned to their previous occupations within six months, while the majority reported fair-to-good overall health. These findings demonstrate substantial improvement in quality of life after surgery and are comparable with published reports showing improved physical functioning, reduced disability, and enhanced psychosocial well-being following LPJ.[10,24,25,29] Relief from chronic pain and decreased dependence on analgesics likely contributed to improved occupational performance and daily functioning.

The safety profile of LPJ observed in the present study was encouraging. Although rehospitalization and reoperation were required in a small proportion of patients, no postoperative mortality occurred. These findings are comparable to those reported by Izbicki et al., Adams et al., and Ramia et al., who demonstrated low morbidity and excellent safety of pancreatic drainage procedures in experienced centres.[24,26,30] Careful patient selection, meticulous surgical technique, and standardized perioperative care are likely responsible for these favorable outcomes.

The present study further supports the concept that surgery should not be unnecessarily delayed in patients with symptomatic chronic pancreatitis and a dilated pancreatic duct. Increasing evidence suggests that early operative intervention provides better pain control and greater preservation of pancreatic function than prolonged medical or endoscopic therapy.[4,5,17,18] Delayed intervention allows continued inflammatory damage and irreversible fibrosis, thereby limiting the potential benefits of surgery. Consequently, current management strategies increasingly advocate timely surgical referral in appropriately selected patients.

The present study has several strengths, including prospective follow-up, standardized postoperative assessment, and evaluation of clinically relevant outcomes such as pain relief, endocrine and exocrine pancreatic function, analgesic requirement, return to work, postoperative morbidity, and mortality. However, certain limitations should be acknowledged. The study was conducted at a single tertiary-care centre with a relatively small sample size and a follow-up duration of only six months. Long-term multicentre studies involving larger patient populations are required to evaluate sustained pain relief, preservation of pancreatic function, nutritional outcomes, quality of life, and overall survival.

Overall, the findings of this study reinforce existing evidence that lateral pancreaticojejunostomy remains an effective and safe surgical option for carefully selected patients with chronic pancreatitis and a dilated main pancreatic duct. Significant pain relief, reduced analgesic dependence, improvement in pancreatic function in a proportion of patients, satisfactory functional recovery, and minimal postoperative mortality collectively support the continued role of LPJ as an important surgical procedure in the comprehensive management of chronic pancreatitis.[4,5,17,24–30]

A 2025 systematic review by Roberto M. Montorsi and colleagues compared minimally invasive and open lateral pancreaticojejunostomy in patients with painful chronic pancreatitis. Nineteen retrospective studies were included. The review demonstrated that pain relief ranged from **71% to 100%** after minimally invasive LPJ and **62% to 91%** after open LPJ, with comparable rates of endocrine and exocrine insufficiency and shorter hospital stay following minimally invasive surgery. The authors concluded that minimally invasive LPJ is a safe and effective alternative in appropriately selected patients. These findings are consistent with the present study, which also demonstrated significant postoperative pain relief and a favorable safety profile. **Study 2 (2025) studied** A prospective multicentre European study (ESCOPA) published in 2025 evaluated **207 patients** undergoing surgery for symptomatic chronic pancreatitis across 22 centres in 13 countries. At 6-month follow-up, **72.6%** of patients experienced significant pain relief, major postoperative morbidity was **14.0%**, and 90-day mortality was **1.4%**. Significant improvements in quality of life were also observed. The investigators concluded that surgery provides effective pain control with acceptable morbidity and recommended early multidisciplinary assessment for patients with symptomatic chronic pancreatitis. These findings support the results of the present study, where substantial pain relief, improved functional recovery, and no postoperative mortality were observed. **Study 3 (2026)studied**

In 2026, M. P. Y. Tu and colleagues described the robotic modified Puestow procedure for chronic pancreatitis. The report highlighted that robotic LPJ is technically feasible and allows precise pancreatic duct exploration and intracorporeal reconstruction while preserving the advantages of minimally invasive surgery. The authors concluded that robotic LPJ may provide excellent postoperative recovery and represents a promising advancement for selected patients treated in experienced centres.

CONCLUSION

The present study demonstrates that lateral pancreaticojejunostomy is a safe and effective surgical procedure for the management of chronic pancreatitis in patients with a dilated main pancreatic duct. The procedure provided significant postoperative pain relief, markedly reduced analgesic dependence, improved endocrine and exocrine pancreatic function in a considerable proportion of patients, and facilitated return to normal occupational activity. The absence of postoperative mortality and the low incidence of complications further support the safety of this procedure. Although long-term preservation of pancreatic function depends on disease progression and adherence to lifestyle modifications, lateral pancreaticojejunostomy remains an important surgical option for carefully selected patients in whom conservative and endoscopic therapies have failed. Further multicentre studies with larger sample sizes and longer follow-up are warranted to evaluate long-term functional outcomes and quality of life.

Limitations of the Study

1. **Small sample size:** The study included only 57 patients from a single tertiary care centre, which may limit the generalizability of the findings to the broader population.
2. **Short follow-up period:** Patients were followed for only six months after surgery, which was insufficient to evaluate long-term pain relief, preservation of pancreatic function, recurrence, and survival outcomes.
3. **Single-centre observational design:** The absence of a control group and the observational nature of the study may have introduced selection bias and limited direct comparison with alternative treatment modalities such as endoscopic therapy or pancreatic resection procedures.

Declarations:
Conflicts of interest: There is no any conflict of interest associated with this study
Consent to participate: There is consent to participate.
Consent for publication: There is consent for the publication of this paper.
Authors' contributions: Author equally contributed the work.

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