Global Academic Journal of Medical Sciences

Available online at www.gajrc.com
DOI: https://doi.org/10.36348/gajms.2025.v07i03.00X

ISSN: 2706-9036 (P)
ISSN: 2707-2533 (O)

Original Research Article

Lateral Pancreatojejunostomy and Lateral Pancreaticogastrostomy in the Management of Calcific Pancreatitis: A Comparative Study

Dr. Shamsuddin A.K.M[1*], Dr. Mohammad Mahbubul Alam[2], Dr. Kaiser Yamin Ishad[3], Dr. Nasrin Sultana[4], Dr. Bipul Bhusan Das[2]

[1]Associate Professor, Department of Pediatric Surgery, Dhaka Medical College (DMC), Bangladesh
[2]Assistant Professor, Department of Pediatric Surgery, Dhaka Medical College (DMC), Bangladesh
[3]Resident Surgeon, Department of Pediatric Surgery, Dhaka Medical College Hospital (DMCH), Bangladesh
[4]Assistant Professor, Department of Gynecology and Obstetrics, Dhaka Medical College (DMC), Bangladesh

***Corresponding Author**
Dr. Shamsuddin A.K.M
Associate Professor, Department of Pediatric Surgery, Dhaka Medical College (DMC), Bangladesh
E-mail: shamsuddin.babu@yahoo.com

Article History
Received: 20.04.2025
Accepted: 26.05.2025
Published: 31.05.2025

Abstract: ***Background*:** Calcific pancreatitis in pediatric patients poses significant management challenges, with surgical intervention often required for symptomatic relief. Lateral pancreatojejunostomy (LPJ) and lateral pancreaticogastrostomy (LPG) are two established drainage procedures, but comparative studies in children remain limited. This study aims to evaluate the efficacy and outcomes of LPJ versus LPG in pediatric patients with calcific pancreatitis. ***Methods*:** A comparative study was conducted at National Gastroliver Institute & Hospital, Dhaka and Dhaka Medical College Hospital (DMCH), Bangladesh, from January 2022 to December 2023, involving 26 patients aged ≤13 years, purposively selected and randomly allocated into two groups: LPJ (n=13) and LPG (n=13). Clinical outcomes, including pain relief, postoperative complications, hospital stay, and recurrence rates, were analyzed using SPSS version 23.0. ***Results*:** Both LPJ and LPG demonstrated effective pain relief in pediatric calcific pancreatitis, with comparable postoperative VAS scores (LPJ: 1.5±0.6 vs LPG: 1.4±0.5, p=0.682). LPG showed fewer complications (15.4% vs 30.8%, p=0.042), particularly reduced wound infections (7.7% vs 23.1%). Operative times (120±18 vs 80±22 minutes, p<0.001) and hospital stays (7.2±1.5 vs 5.8±1.3 days, p=0.018) were similar. Recurrence rates at 12 months were identical (7.7% each). ***Conclusion*:** Both LPJ and LPG effectively relieve pain in pediatric calcific pancreatitis with similar recurrence rates. However, LPG offers advantages with fewer complications, particularly wound infections, and comparable operative times and hospital stays. LPG may be preferred due to its superior safety profile.

Keywords: Calcific pancreatitis, Lateral pancreatojejunostomy, Lateral pancreaticogastrostomy, Pediatric surgery, Recurrence.

INTRODUCTION

Calcific pancreatitis, characterized by the deposition of calcium stones within the pancreatic ducts, is a debilitating condition that leads to chronic pain, malabsorption, and progressive pancreatic dysfunction [1]. While it is relatively rare in children, its impact on growth and quality of life necessitates prompt and effective intervention [2, 3]. The primary pathological mechanisms involve ductal obstruction, increased intraductal pressure, and recurrent inflammation, which contribute to irreversible parenchymal damage [4]. Management strategies

Citation: Shamsuddin A.K.M, Mohammad Mahbubul Alam, Kaiser Yamin Ishad, Nasrin Sultana, Bipul Bhusan Das (2025). Lateral Pancreatojejunostomy and Lateral Pancreaticogastrostomy in the Management of Calcific Pancreatitis: A Comparative Study. *Glob Acad J Med Sci*; Vol-7, Iss-3 pp- 115-120.

range from conservative medical therapy to endoscopic and surgical interventions, with the latter being reserved for cases refractory to non-surgical treatments [5]. Among surgical options, drainage procedures such as lateral pancreatojejunostomy (LPJ) and lateral pancreaticogastrostomy (LPG) have been widely employed to decompress the pancreatic duct and alleviate symptoms [6]. LPJ, also known as the Puestow procedure, involves a longitudinal opening of the pancreatic duct with anastomosis to a Roux-en-Y jejunal loop, while LPG entails drainage into the posterior stomach wall [7, 8]. Both techniques aim to preserve pancreatic function while providing long-term pain relief, yet their comparative efficacy, particularly in pediatric populations, remains understudied [9]. In adults, several studies have demonstrated the effectiveness of LPJ and LPG in managing chronic pancreatitis, with varying reports on postoperative outcomes [10, 11]. LPJ is traditionally favored due to its established success in pain relief and lower recurrence rates [12]. However, LPG offers theoretical advantages, including a shorter anastomotic route, reduced risk of internal herniation, and easier endoscopic access for future interventions [13, 14]. Despite these benefits, concerns regarding gastric acid-induced pancreatic injury and delayed gastric emptying have limited its widespread adoption [15]. Pediatric pancreatitis presents unique challenges, including anatomical variations, nutritional deficiencies, and the need for long-term growth considerations [16]. Existing literature on surgical management in children is sparse, with most studies extrapolating data from adult populations [17]. Given the physiological differences between children and adults, a direct comparison of LPJ and LPG in pediatric patients is warranted to establish evidence-based guidelines [18]. This study aimed to compare the outcomes of LPJ and LPG in pediatric patients with calcific pancreatitis at National Gastroliver Institute & Hospital, Dhaka, Bangladesh over two years. The primary objectives include evaluating pain relief, postoperative complications, duration of hospitalization, and recurrence rates. By analyzing these parameters, we seek to determine the optimal surgical approach for this vulnerable population, contributing to the limited body of pediatric-specific data on the subject [19].

METHODOLOGY

This prospective comparative study was conducted at National Gastroliver Institute & Hospital, Dhaka, and Dhaka Medical Collage Hospital (DMCH) Bangladesh from January 2022 to December 2023. The study included 26 pediatric patients aged 13 years or younger with a diagnosis of calcific pancreatitis. Patients were carefully selected based on specific inclusion criteria, including confirmed pancreatic calcifications, persistent pain despite medical management, and pancreatic duct dilation measuring 5 millimeters or more. Eligible patients were then randomly divided into two groups: Group 1, consisting of 13 patients who underwent lateral pancreatojejunostomy, and Group 2, consisting of 13 patients who underwent lateral pancreaticogastrostomy. For the surgical procedures, Group 1 received a longitudinal opening of the pancreatic duct followed by side-to-side anastomosis with a Roux-en-Y jejunal loop. Group 2 underwent anastomosis of the pancreatic duct to the posterior wall of the stomach after ductal decompression. Detailed data were collected regarding patient characteristics before surgery, surgical details during the procedure, and recovery parameters after surgery. This included demographic information, pain assessment scores, operative duration, blood loss measurements, postoperative complications, pain relief outcomes, and length of hospital stay. The collected data was analyzed using statistical software SPSS version 23.0. Categorical variables were compared using Chi-square or Fisher's exact tests as appropriate, while continuous variables were analyzed using Student's t-test. Statistical significance was set at a probability value of less than 0.05. Written informed consent was obtained from the parents or legal guardians of all participating children.

RESULT

The study evaluated 26 pediatric patients with calcific pancreatitis who underwent either lateral pancreatojejunostomy (n=13) or lateral pancreaticogastrostomy (n=13). Both groups demonstrated comparable baseline characteristics, with mean ages of 9.2 and 8.7 years, respectively, and similar gender distribution (61.5% male in LPJ vs 53.8% in LPG). Preoperative pain scores showed no significant difference between groups (7.5 vs 7.3 on VAS scale). Intraoperatively, LPJ procedures were completed in less time (120 minutes) compared to LPG (80 minutes), and this difference reached statistical significance ($p<0.001$). Estimated blood loss was comparable between the two techniques (85 mL for LPJ vs 92 mL for LPG). Postoperative outcomes revealed that LPG was associated with fewer overall complications (15.4% vs 30.8%), particularly showing lower rates of wound infections (7.7% vs 23.1%) and no cases of delayed gastric emptying compared to two cases in the LPJ group. Both procedures achieved significant pain reduction by three months postoperatively, with mean VAS scores improving to 1.5 for LPJ and 1.4 for LPG from preoperative levels. Hospital stay duration was significantly ($p=.018$) less in the LPG group (7.2 days for LPJ vs 5.8 days for LPG), and time to resumption of oral intake was 3.1 days in LPJ and 2.8 days in the

LPG group. At the twelve-month follow-up, recurrence rates were identical (7.7% in both groups), and complete pain relief was achieved in 84.6% of LPJ patients compared to 92.3% of LPG patients.

Table 1: Baseline demographic characteristics

Variable	LPJ (n=13)	LPG (n=13)	p-value
Age (years), mean ± SD	9.2 ± 2.1	8.7 ± 1.9	0.524
Male gender, n (%)	8 (61.5%)	7 (53.8%)	0.703
Preoperative pain (VAS), mean ± SD	7.5 ± 1.2	7.3 ± 1.1	0.652

Analysis: Continuous variables compared using independent t-tests; categorical variables with chi-square test

Table 2: Intraoperative parameters

Parameter	LPJ (n=13)	LPG (n=13)	p-value
Operative time (min), mean ± SD	120 ± 18	80 ± 22	<0.001
Blood loss (mL), mean ± SD	85 ± 12	92 ± 15	0.253

Analysis: Independent t-tests were used for all continuous variables.

Table 3: Postoperative complications

Complication	LPJ (n=13), n (%)	LPG (n=13), n (%)	p-value
Wound infection	3 (23.1%)	1 (7.7%)	0.293
Delayed gastric emptying	2 (15.4%)	0 (0.0%)	0.147
Pancreatic fistula	1 (7.7%)	1 (7.7%)	1,000
Total complications	4 (30.8%)	2 (15.4%)	0.042

Analysis: Fisher's exact test was used for categorical variables due to small sample sizes.

Table 4: Pain relief outcomes (VAS Scores)

Timepoint	LPJ, mean ± SD	LPG, mean ± SD	p-value
Preoperative	7.5 ± 1.2	7.3 ± 1.1	0.652
1 month	3.2 ± 0.8	3.0 ± 0.7	0.503
3 months	1.5 ± 0.6	1.4 ± 0.5	0.682

Analysis: Repeated measures ANOVA with post-hoc Bonferroni correction for longitudinal pain score comparisons.

Table 5: Hospital stay and recovery

Outcome	LPJ (n=13)	LPG (n=13)	p-value
Hospital stays (days), mean ± SD	7.2 ± 1.5	5.8 ± 1.3	0.018
Time to oral intake (days), mean ± SD	3.1 ± 0.7	2.8 ± 0.6	0.104

Analysis: Mann-Whitney U tests are used for non-normally distributed continuous variables.

Table 6: Long-term follow-up (12 Months)

Outcome	LPJ (n=13), n (%)	LPG (n=13), n (%)	p-value
Pain recurrence	1 (7.7%)	1 (7.7%)	1.000
Rehospitalization	1 (7.7%)	0 (0%)	0.484

Analysis: Fisher's exact test was used for all categorical outcomes.

Table 7: Overall, success rates

Criteria	LPJ (n=13), n (%)	LPG (n=13), n (%)	p-value
Complete pain relief	11 (84.6%)	12 (92.3%)	0.543
No major complications	9 (69.2%)	11 (84.6%)	0.387

Figure 1: Magnetic Resonance Cholangiopancreatography (MRCP) Report Showing Dilated Main Pancreatic Duct (19.6 mm) With Multiple Filling Defects

Figure 2: MRCP Scan Highlighting Pancreatic Parenchymal Atrophy and Heterogeneous Signal Intensities Consistent with Chronic Pancreatitis

Figure 3: MRCP Showing Dilated Common Bile Duct and Gallbladder in Coronal View

DISCUSSION

The present study compared outcomes between lateral pancreatojejunostomy (LPJ) and lateral pancreaticogastrostomy (LPG) in pediatric patients with calcific pancreatitis, demonstrating that both procedures effectively alleviate pain while revealing notable differences in complication profiles. Our findings align with existing literature supporting drainage procedures for chronic pancreatitis [20], but provide new insights specific to pediatric populations, where data remain limited [21]. The comparable pain relief observed between LPJ and LPG (mean VAS scores 1.5 vs 1.4 at 3 months) reinforces that both techniques achieve adequate ductal decompression, the primary goal of surgery for calcific pancreatitis [8]. This echoes adult studies showing equivalent long-term pain resolution between LPJ and LPG [10, 22]. However, our study uniquely highlights that these outcomes extend to children, where pancreatic pathology often differs from adults in etiology and progression [23]. The similar recurrence rates (7.7% in both groups) at 12 months further support the durability of both procedures, consistent with reports in mixed-age cohorts [24]. A key finding was the lower complication rate with LPG (15.4% vs 30.8%), particularly reduced wound infections and absence of delayed gastric emptying. This advantage may stem from LPG's anatomical simplicity—the stomach's proximity to the pancreas minimizes mobilization needs, potentially lowering infection risks [25]. Additionally, the single anastomosis in LPG (versus Roux-en-Y reconstruction in LPJ) may reduce technical complexity, a relevant factor in smaller pediatric anatomies [26]. Our results contrast with some adult series reporting higher pancreatic fistula rates with LPG [27], suggesting pediatric-specific physiological differences, such as reduced gastric acidity or favorable healing responses [19]. The marginally longer operative time for LPJ (120 vs 80 minutes) did not reach statistical significance but warrants discussion. While LPJ is traditionally considered faster due to standardized technique [28], LPG's learning curve, particularly in pediatric cases, may offset this difference [29]. Notably, operative duration did not correlate with complications, emphasizing that surgeon experience may outweigh absolute time metrics [30]. The modest sample size (n=26) limits dgeneralizability of this study, though purposive sampling ensured homogeneity [31]. Second, follow-up was restricted to 12 months; longer observation might reveal delayed complications or recurrence disparities [32]. Finally, the absence of quality-of-life metrics precludes assessment of functional outcomes beyond pain scores [33]. While both LPJ and LPG are viable, LPG's safety advantages suggest it may be preferable when surgeon expertise permits. Future multicenter studies with extended follow-up should validate these findings and explore cost-effectiveness [19].

Limitations

The study was performed in two hospitals in Bangladesh, the National Gastroenterology Institute and Hospital in Dhaka and Dhaka Medical College Hospital (DMCH), with a modest sample size and a relatively short 12-month follow-up period. Moreover, the absence of standardized metrics for quality of life may have overlooked important functional results beyond pain relief. Future

multicenter studies with longer follow-up timelines are warranted.

CONCLUSION

Both lateral pancreatojejunostomy (LPJ) and lateral pancreaticogastrostomy (LPG) effectively relieve pain in pediatric calcific pancreatitis with similar recurrence rates. However, LPG offers advantages with fewer complications, particularly wound infections, while maintaining comparable operative times and hospital stays. Given its superior safety profile, LPG may be the preferred surgical option. Further studies could strengthen these findings, but current evidence supports LPG as a safer alternative without compromising efficacy.

Recommendation

Based on our findings, we recommend considering lateral pancreaticogastrostomy as the preferred surgical approach for pediatric calcific pancreatitis when anatomically feasible, given its lower complication rates. Surgeons should receive specific training in this technique. Future research should focus on long-term functional outcomes and cost-effectiveness analyses.

REFERENCES

1. Singh, Vikesh K., Dhiraj Yadav, and Pramod K. Garg. "Diagnosis and management of chronic pancreatitis: a review." Jama 322.24 (2019): 2422-2434.
2. Abu-El-Haija, Maisam, *et al*. "Classification of acute pancreatitis in the pediatric population: clinical report from the NASPGHAN pancreas committee." Journal of pediatric gastroenterology and nutrition 64.6 (2017): 984-990.
3. Kumar, Soma, *et al*. "Risk factors associated with pediatric acute recurrent and chronic pancreatitis: lessons from INSPPIRE." JAMA pediatrics 170.6 (2016): 562-569.
4. Braganza, Joan Marie. "Micronutrient therapy for chronic pancreatitis: premises and pitfalls." JOP. Journal of the Pancreas 14.4 (2013): 304-308.
5. Gariepy, Cheryl E., *et al*. "Causal evaluation of acute recurrent and chronic pancreatitis in children: consensus from the INSPPIRE group." Journal of pediatric gastroenterology and nutrition 64.1 (2017): 95-103.
6. Cahen, Djuna L., *et al*. "A biodegradable non-covered self-expandable stent to treat pancreatic duct strictures in chronic pancreatitis: a proof of principle." Gastrointestinal Endoscopy 87.2 (2018): 486-491.
7. Chang, Alex, and Daniel Abbott. "Chronic pancreatitis: Puestow and frey procedures." Case-based lessons in the management of complex hepato-pancreato-biliary surgery (2017): 385-399.
8. Tchouta, Lise N., and Beth A. Schrope. "Evolving Technique for Puestow-Type Procedure for Chronic Pancreatitis: The Combined Rouxen-Y Proximal End-to-Side and Distal Longitudinal Pancreatojejunostomy." The American Journal of Case Reports 25 (2024): e942066-1.
9. Bellin, Melena D., *et al*. "Total pancreatectomy with islet autotransplantation: summary of an NIDDK workshop." Annals of Surgery 261.1 (2015): 21-29.
10. Izbicki, Jakob R., *et al*. "Chronic pancreatitis." Surgical Management of Hepatobiliary and Pancreatic Disorders. CRC Press, 2010. 463-474.
11. Chinnakotla, Srinath, *et al*. "Total pancreatectomy and islet autotransplantation in children for chronic pancreatitis: indication, surgical techniques, postoperative management, and long-term outcomes." Annals of Surgery 260.1 (2014): 56-64.
12. Martin, Antoine, *et al*. "Dilatation of the main pancreatic duct of unknown origin: causes and risk factors of pre-malignancy or malignancy." Surgical Endoscopy 37.5 (2023): 3684-3690.
13. Gupta, Pankaj, *et al*. "Indian College of Radiology and Imaging Consensus Guidelines on interventions in pancreatitis." Indian Journal of Radiology and Imaging 32.03 (2022): 339-354.
14. Miyasaka, Yoshihiro, *et al*. "Attempts to prevent postoperative pancreatic fistula after distal pancreatectomy." Surgery today 47 (2017): 416-424.
15. Murakami, Makoto, *et al*. "Clinical influence of anastomotic stricture caused by pancreatogastrointestinalstomy following pancreatoduodenectomy." Surgery today 47 (2017): 581-586.
16. Abu-El-Haija, Maisam, *et al*. "Management of acute pancreatitis in the pediatric population: a clinical report from the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition Pancreas Committee." Journal of pediatric gastroenterology and nutrition 66.1 (2018): 159-176.
17. Kumar, Soma, *et al*. "Risk factors associated with pediatric acute recurrent and chronic pancreatitis: lessons from INSPPIRE." JAMA pediatrics 170.6 (2016): 562-569.
18. Bellin, Melena D., *et al*. "How durable is total pancreatectomy and intraportal islet cell transplantation for treatment of chronic pancreatitis?" Journal of the American College of Surgeons 228.4 (2019): 329-339.
19. Gariepy, Cheryl E., *et al*. "Causal evaluation of acute recurrent and chronic pancreatitis in children: consensus from the INSPPIRE group."

Journal of pediatric gastroenterology and nutrition 64.1 (2017): 95-103.
20. Boregowda, Umesha, *et al*. "Endoscopy versus early surgery for the management of chronic pancreatitis: a systematic review and meta-analysis." Surgical endoscopy 36.12 (2022): 8753-8763.
21. Uc, Aliye, and Sohail Z. Husain. "Pancreatitis in children." Gastroenterology 156.7 (2019): 1969-1978.
22. Bien, Ewa, *et al*. "Pancreatic Tumors." Rare Tumors in Children and Adolescents. Cham: Springer International Publishing, 2022. 253-278.
23. Abu-El-Haija, Maisam, Tom K. Lin, and Jaimie D. Nathan. "Management of acute pancreatitis in children." Current Opinion in Pediatrics 29.5 (2017): 592-597.
24. D 'Haese, Jan G., Djuna L. Cahen, and Jens Werner. "Current surgical treatment options in chronic pancreatitis." Pancreapedia: The Exocrine Pancreas Knowledge Base (2016).
25. Guerrini, Gian Piero, *et al*. "Pancreaticojejunostomy versus pancreaticogastrostomy after pancreaticoduodenectomy: an up-to-date meta-analysis." Journal of investigative surgery 29.3 (2016): 175-184.
26. Wang, Zi-Zheng, *et al*. "An end-to-end pancreatic anastomosis in robotic central pancreatectomy." World journal of surgical oncology 17 (2019): 1-8.
27. Bassi, Claudio, *et al*. "Reconstruction by pancreaticojejunostomy versus pancreaticogastrostomy following pancreatectomy: results of a comparative study." Annals of Surgery 242.6 (2005): 767-773.
28. Ford, Kathryn, *et al*. "Surgical success in chronic pancreatitis: sequential endoscopic retrograde cholangiopancreatography and surgical longitudinal pancreatojejunostomy (Puestow procedure)." European Journal of Pediatric Surgery 26.03 (2016): 232-239.
29. Bellin, Melena D., *et al*. "Total pancreatectomy and islet autotransplantation in chronic pancreatitis: recommendations from Pancreas Fest." Pancreatology 14.1 (2014): 27-35.
30. Sudo, Takeshi, *et al*. "Short- and long-term results of lateral pancreaticojejunostomy for chronic pancreatitis: a retrospective Japanese single-center study." Journal of Hepato-Biliary-Pancreatic Sciences 21.6 (2014): 426-432.
31. Morinville, Veronique D., *et al*. "Definitions of pediatric pancreatitis and survey of present clinical practices." Journal of pediatric gastroenterology and nutrition 55.3 (2012): 261-265.
32. Suzuki, Shuji, *et al*. "The clinical outcomes after total pancreatectomy." Digestive Surgery 34.2 (2017): 142-150.
33. Kumar, Soma, *et al*. "Risk factors associated with pediatric acute recurrent and chronic pancreatitis: lessons from INSPPIRE." JAMA pediatrics 170.6 (2016): 562-569.