

Laparoscopic lateral pancreaticojejunostomy in the current era: A narrative review

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Abstract

Chronic pancreatitis is a benign disease which causes recurrent abdominal pain and loss of pancreatic function. Lateral pancreaticojejunostomy (LPJ) is a commonly performed drainage procedure for this condition. While usually performed through an open approach, there have been few cases of laparoscopic approaches for this condition. A literature review was conducted to understand the current status of laparoscopic longitudinal pancreatojejunostomy (LLPJ). We conducted a comprehensive literature search using PubMed, Embase and Cochrane Library to find the articles published until 1st October 2023. We excluded studies involving paediatric patients or robotic assisted surgeries. Our evaluation focussed on pain relief scores, morbidity, hospital stay length, mortality rates and the development of endocrine and exocrine deficiencies in the patients. The patients in the analysis had a mean age of 36.5 and a male to female ratio of 1.4:1. The mean main pancreatic duct diameter was 11.5 mm. Tropical pancreatitis was identified as the primary cause. The surgical procedure was performed using 4 ports with minimal bleeding and a 13% morbidity rate. The conversion rate was 15%. The average operative time was 260 min and the mean hospital stay was 5.7 days. The results for pain control were excellent, as 90% of patients did not report pain in most series at the end of 3 years. The laparoscopic surgical management of chronic calcific pancreatitis with LPJ offers a safe and effective solution for pain relief in carefully chosen patients. However, further comprehensive studies with large sample sizes are essential to establish a more conclusive comparison between LLPJ and open surgery.

Keywords: Chronic pancreatitis, laparoscopic LPJ, laparoscopy, modified Puestow procedure

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INTRODUCTION

Chronic calcific pancreatitis (CCP) is a benign debilitating disorder of the pancreas, characterised by recurrent bouts of abdominal pain, with gradual loss of the function of the gland leading to steatorrhoea and diabetes. The gland progressively undergoes fibrosis, thereby losing its function and leading to a deterioration of quality of life. The cause of abdominal pain is multifactorial.^[1] The most accepted

pain mechanism in CCP is the increased intraductal/intraparenchymal pressure due to a thick mucus plug or stone in the main pancreatic duct (MPD), known as ‘the plumbing theory’.^[2]

CCP is traditionally managed with pharmacotherapy; however, endoscopic or surgical interventions are indicated in patient’s refractory to medical management. There

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is enough evidence to suggest that early surgery has provided better pain relief when compared to endoscopic interventions.^[3-5] Surgical procedures for CCP are divided into resectional procedures, drainage procedures and a combination of these. The selection of procedure is based on the size of the pancreatic duct (PD), the extent of pancreatic calcification, the size of the head of the pancreas and suspicion of Groove pancreatitis and/or malignant disorder.^[6]

Lateral pancreaticojejunostomy (LPJ), which is also known as Modified Puestow or Partington–Rochelle procedure, is the commonly used drainage procedure in patients with dilated and obstructed PD without inflammatory mass.^[7] It is usually performed through an open approach. Owing to technical difficulties, the adaptation of laparoscopy for LPJ is abysmal. The technical difficulty, combined with the potential fear of vascular injury and bleeding from the chronically inflamed pancreatic tissue, is the primary reason for the slow adaptation to minimally invasive procedures in these patients.^[8] Kurian and Gagner performed the first laparoscopic lateral pancreaticojejunostomy using intraoperative ultrasonography, stapling devices and direct suturing.^[9] With advancements in laparoscopic surgery, laparoscopic LPJ is recently gaining acceptance in many centres. The present review focuses to explore the current status of laparoscopic LPJ in the management of CCP.

TECHNIQUE OF LAPAROSCOPIC LPJ

Position and trocar placement

Most authors placed the patient in the reverse Trendelenburg's position. Palanivelu *et al.*^[10] and Tantia *et al.*^[11] used a sandbag under the left lower rib cage to get adequate exposure. Veress needle technique was used to create a pneumoperitoneum in most series.^[9,11-14] We use open Hasson's technique to create pneumoperitoneum.^[15,16] In most series, the procedure was done using five laparoscopic trocars. However, Rege *et al.*^[12] have described laparoscopic LPJ in 3-port and 4-port technique.

Exposure of the pancreas

Most authors approached the lesser sac through the gastrocolic ligament to expose the anterior surface of the pancreas.^[10,11,14,15,17,18] This can be particularly challenging in patients with recent acute episodes of pancreatitis and in the presence of severe adhesions. The antrum of the stomach is then mobilised. Most authors used a sling (umbilical tape) for retraction of the stomach to the anterior abdominal wall during the surgery.^[12,15,18]

Alternatively, a nylon seromuscular stitch on the posterior surface of the stomach can be used to retract the stomach as described by Palanivelu *et al.*^[10]

Pancreatic duct identification, exposure and clearance

PD is identified by direct blunt palpation or by aspirating using a lumbar puncture needle, as described by Palanivelu *et al.*^[10] Nevertheless, a laparoscopic ultrasound was used in complex cases with undilated ducts, as described by Senthilnathan *et al.*^[13] We exposed PD with direct application of unipolar coagulation current over the anterior surface of the pancreas as shown in Figure 1.^[15] Alternatively, the harmonic scalpel was used by Palanivelu *et al.*^[10] The body region of the pancreas is preferred for the incision to reduce the risk of injury to the portal vein; this part of the pancreas is relatively less vascular than the head region of the pancreas. The direction of the incision is perpendicular to the presumed course of the PD. The depth of the incision is gradually increased until the appearance of the pancreatic juice. Once PD is identified, an ultrasonic shear is used to lay open the entire length of PD except about 20 mm at either end. During the process of opening the PD, all ductal calculi should be removed, and calculi inside secondary duct branches also should be cleared. Sahoo and Kumar reported using a cystoscope and endoscopic basket to clear residual intraductal stones.^[14]

Reconstruction

All the authors used a Roux-en-Y limb of jejunum for reconstruction. Depending on the length of the PD, an appropriate-sized opening is made over the Roux-en-Y limb of the jejunum. Interrupted 3-0 polypropylene sutures are applied in side-to-side fashion to create lateral pancreaticojejunostomy (PJ). Khaled *et al.*^[19] reported post-operative bleeding with a continuous suture. They replaced it with a single-point suture. Bhandarwar *et al.*^[18] used the endo-stapler technique if MPD >12 mm, had good results and significantly reduced operative time without any adverse outcomes. Kim and Hong reported the benefit of using barbed sutures for pancreaticojejunostomy anastomosis.^[20] The jejunum is reunited at about 60 cm distal to PJ.

PATIENT SELECTION

As per various studies, laparoscopic lateral pancreaticojejunostomy (LLPJ) can be an attractive option in selected patients with chronic pancreatitis. Patients with complications, such as those with acute pancreatitis, are better suited for open procedures.^[21] Tan *et al.*^[21] did a multiple linear regression analysis and showed that a

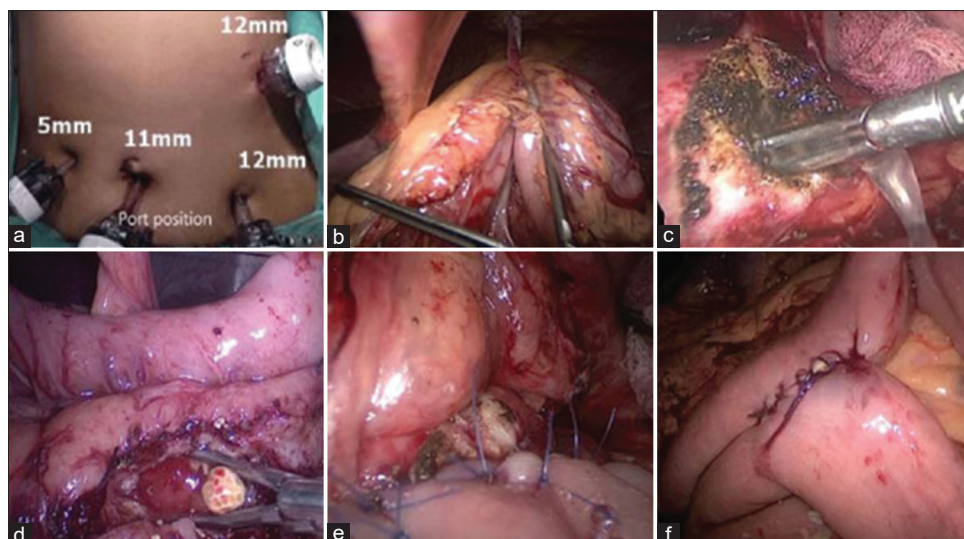


Figure 1: (a) Port position; (b) lifting of the stomach by an encircling tape; (c) exposure of the pancreatic duct; (d) retrieval of pancreatic duct stones; (e) completed pancreaticojejunostomy anastomosis; (f) completed jejunojunction anastomosis source: Nag *et al.*^[16] (reproduced after getting permission from the author)

pancreatic inflammatory mass and pre-operative acute exacerbation were related to the volume of intraoperative blood loss. These two factors usually indicate severe inflammation in the pancreatic head and are considered essential factors for conversion to open surgery and technical difficulty.

Patients with inflammatory mass are best suited to undergo Frey's or Beger's procedure. However, in patients without pancreatic head mass, Frey's and LPJ are equally efficacious in pain relief.^[22] Another critical factor to consider while selecting patients for laparoscopic LPJ is the diameter of MPD. Since the identification of MPD is an integral part of the procedure, a dilated duct will be easier to locate. Few studies have shown that the conversion rates are higher in patients undergoing laparoscopic LPJ in patients with ducts <8 mm.^[16,23] Intraoperative ultrasound can be of great use in such a subset of patients with undilated ducts. The mean MPD diameter in most of the series on laparoscopic LPJ was more than 10 mm,^[10,14,15,18] suggesting a need for a well-dilated duct for easier anastomosis. The ideal patient and imaging characteristics preferred by most authors for laparoscopic LPJ are described below.

Patient and imaging characteristics for laparoscopic LPJ

Inclusion criteria

1. Computed tomography (CT) and magnetic resonance cholangiopancreatography demonstrated MPD larger than 8 mm
2. Absence of extensive calcifications in the head and a head size of <3.5 cm (maximum diameter in any direction) in CT

3. Previous acute exacerbation of pancreatitis was at least 6 weeks before surgery
4. Refractory pain to medical or endoscopic therapy.

Exclusion criteria

1. Pancreatic head mass or suspicion of malignancy in imaging
2. Acute exacerbation of pancreatitis as defined by recent shift to opioids, hospitalisation or serum amylase levels more than three times normal range
3. Imaging features suggestive of acute pancreatitis such as peripancreatic fat stranding and collection
4. Continued smoking or alcohol consumption
5. Portal hypertension.

SEARCH STRATEGY

We conducted an extensive literature search without any restrictions, using PubMed, Embase and Cochrane Library to find articles published until 1 October 2023. We discovered several case series published since 1999. Our search strategy included the keywords 'Laparoscopy' OR 'Laparoscopic' AND 'Puestow' OR 'Pancreaticojejunostomy' OR 'Partington' OR 'Pancreatitis, Chronic'. We followed predetermined criteria to decide which articles to include or reject based on the information from the title, abstract and full article whenever there was any doubt. We excluded studies that involved paediatric patients or robotic-assisted surgeries. We evaluated pain relief scores, morbidity, days of hospital stay, mortality rates and the emergence of endocrine and exocrine deficiencies in the patients. As this is a descriptive study, no meta-analysis or advanced statistical analysis was performed.

RESULTS

We conducted a comprehensive literature search and identified 11 articles that were appropriate for our review. Most of the studies were case series, whereas two were retrospective analyses^[17,23] and one was an observational cohort study.^[13] Only one retrospective analysis was a matched case–control study, which we published in 2022.^[16] Overall, the review included a total of 293 patients. The results of which are showed in Tables 1 and 2.

The studies reviewed in this analysis primarily involved young patients with CCP, with a mean age of 36.5 years. The male-to-female ratio was 1.4:1, indicating a slightly higher prevalence of male patients. All patients had dilated MPDs ranging from 8.7 mm to 13.6 mm (mean: 11.5 mm) due to long-standing CCP. Tropical pancreatitis was identified as the primary cause of CCP, as most of the case series were from India. The surgical procedure was performed laparoscopically using four trocars with a conversion rate of around 15%. The bleeding was minimal (mean –110 mL), the morbidity rate was 13% and there were no cases of mortality.

The average operative time for LLPJ was found to be 260 min. The mean hospital stay was 5.7 days. The follow-up period varied between studies, the longest

being 60 months and the lowest being 12 months. The mean follow-up period was 30 months, and the results for pain control were excellent since 90% of patients did not report pain in most series at the end of 3 years. A comparative analysis of all the studies is represented in the table.

DISCUSSION

Laparoscopic pancreatic surgery has spread at a fast pace over the past 20 years. In 1999, the first report of laparoscopic LPJ (LLPJ) was published, which is usually described as an advanced and complex laparoscopic procedure.^[9] The possible advantages of LLPJ are lower morbidity, less incisional and abdominal pain, and shorter hospital stays. We sought to review the current literature to see if there are advantages that are clinically relevant and the possible complications associated with LLPJ through this review.

The primary advantage of laparoscopy is its minimally invasive nature. The use of small incisions reduces tissue trauma and thereby reduces postoperative pain and the risk of wound infection. Multiple series^[10,14,15,18] have shown faster recovery in patients undergoing laparoscopic LPJ, which will be further discussed in the comparative analysis. Another advantage of the laparoscopic approach is reduced

Table 1: Various studies published on laparoscopic lateral pancreaticojejunostomy

Authors	Study type	Year	Cases (n)	Mean age (year)	Sex (male/female)	Mean MPD diameter (mm)	Conversion rate (%)
Tantia <i>et al.</i> ^[11]	Case series	2004	17	36.6	9 male/8 female	11.2	23.5
Palanivelu <i>et al.</i> ^[10]	Case series	2006	12	29.3	3 male/9 female	14.2	Nil
Sahoo and Kumar ^[14]	Case series	2014	12	19–45	NA	14.8	Nil
Kim and Hong ^[20]	Case series	2016	11	54.4	10 male/1 female	12.9	Nil
Nag <i>et al.</i> ^[15]	Case series	2019	24	30.9	13 male/11 female	10	29.2
Bhandarwar <i>et al.</i> ^[18]	Case series	2019	28	41.18	19 male/9 female	10.89	14.2
Rege <i>et al.</i> ^[12]	Case series	2019	14	41.8	NA	8.7	32.2
Senthilnathan <i>et al.</i> ^[13]	Observational cohort	2019	39	34.2	34 male/20 female	9.7	11
Javed <i>et al.</i> ^[23]	Retrospective analysis	2020	41	30.7	26 male/15 female	13.6	Excluded
Nag <i>et al.</i> ^[16]	Retrospective analysis (case control matched)	2022	33	32	24 male/9 male	10	28.9
Rege <i>et al.</i> ^[17]	Retrospective analysis	2024	62	41.1	37 male/25 female	9	12.2

NA: Not available, MPD: Main pancreatic duct

Table 2: Outcomes in various studies on laparoscopic lateral pancreaticojejunostomy

Authors	Surgery time (min)	Blood loss (mL)	Hospital stay (days)	Pain free (%)	Follow-up (months)	Mortality
Tantia <i>et al.</i> ^[11]	277	130	5.2	82.30	12	Nil
Palanivelu <i>et al.</i> ^[10]	178	NA	5	83.30	52.8	Nil
Sahoo and Kumar ^[14]	262	150	5–10	100	16.5	Nil
Kim and Hong ^[20]	200	42.2	6.5	NA	21.0	Nil
Nag <i>et al.</i> ^[15]	320	101.2	8	95.50	26	Nil
Bhandarwar <i>et al.</i> ^[18]	189.7	NA	5.8	87.5	12	Nil
Rege <i>et al.</i> ^[12]	132	100	5.2	90	14.2	Nil
Senthilnathan <i>et al.</i> ^[13]	220	184.5	6.4	91	58.4	Nil
Javed <i>et al.</i> ^[23]	180	110	5	91	43.6	Nil
Nag <i>et al.</i> ^[16]	300	100	7	71	25.0	Nil
Rege <i>et al.</i> ^[17]	165	100	5.3	77.4	60	Nil

NA: Not available

hospital stay. The reduced post-operative pain and earlier return to normal activities have a significant impact on efficient healthcare resource utilisation.^[15]

The laparoscopic approach requires a significant learning curve for the surgeons. Mastering the art of intracorporeal suturing and tissue manipulation is mandatory to minimise the risk of intraoperative complications. Laparoscopic surgery poses technical challenges related to the limited range of motion and reduced tactile feedback, especially in LPJ, where duct identification is an important step. In addition, managing bleeding and achieving haemostasis can be more intricate in a laparoscopic setting.^[16]

Currently, there are no comparative studies with a proper methodological design that have evaluated the benefits of open surgery and LLPJ. In 2011, Khaled *et al.*^[18] compared some series of open and laparoscopic surgery in their review. They suggested that the laparoscopic approach results in a shorter hospital stay and a lower rate of post-operative complications. However, this review had only a few case series published until 2010. In 2019, Ramia *et al.*^[24] published a descriptive analysis of the minimally invasive approach in LPJ. However, this analysis included paediatric patients and robot-assisted surgery cases.

We published a matched case–control study in 2022.^[16] It is the only study to compare open and laparoscopic surgery groups in managing CCP. The total number of unmatched patients was 99, and post-matching, there were 38 patients in each laparoscopic group (LG) and open group (OG). Significantly lower blood loss (100 vs. 120 mL) and higher operation time (300 vs. 210 min) were observed in LG. The post-operative complication rate was 7.9% in the LG group versus 10.5% in the OG group. More than 85% of the patients in both groups had significant relief from pain. The impact of exocrine and endocrine insufficiency was not remarkable in both groups. The requirement for an additional surgical procedure was associated with a high conversion rate.

In terms of blood loss, comparing the two techniques shows a clear difference between the amount of blood loss encountered in the two modalities. On average, 110 mL was observed in patients undergoing LLPJ. Open surgery had a blood loss of around 130 mL, as described earlier.^[16] However, a confounding factor in these results can be that laparoscopic surgery is undertaken by experienced hands only. The only disadvantage associated with LLPJ is the longer operative time as compared to the open approach. The mean duration of surgery was 260 min, which was higher than the open approach, but it did not attain

statistical significance in the comparative studies that have been published.^[13,16,25]

Diabetic control appeared to have similar results to the open approach. The post-operative morbidity rate in LLPJ (13%) is comparable to open surgery.^[26] There were no deaths in the limited number of series that have been published. Another common complication arising post-LPJ is new onset exocrine and endocrine deficiency. Senthilnathan *et al.* reported^[13] new onset endocrine and exocrine deficiency rates of 14% and 13%, respectively. In our study, new onset endocrine and exocrine deficiency rates were 10% and 30%, respectively. These results were comparable to the open approach described in the literature.^[17,27]

Another important post-operative outcome of CCP surgery is pain relief. Sielezneff *et al.* reported relief from pain as excellent in 28%, good in 47% and fair in 16% following open surgery, whereas Sudo *et al.* reported it up to 97%.^[28,29] The average pain-free percentage in the published series on LLPJ is 88%. Hence, we can conclude that these results are comparable to those of open surgery.^[16,17,21,27] Schnelldorfer *et al.*, in their most extensive experience of 372 patients, reported that only 50% of patients had pain control, 62% returned to regular work post-procedure and 29% and 35% of the patients developed endocrine and exocrine deficiency, respectively.^[30] These results must be taken with a pinch of salt since the study also included patients who underwent the Whipple procedure. By and large, pain control is comparable between laparoscopic and open approaches.

CONCLUSION

Laparoscopic LPJ (LLPJ) has its advantages over the open technique in terms of less blood loss and shorter hospital stays. Intra- and postoperative complication profiles are similar to the open approach. Post-operative endocrine insufficiency at the end of 6 months is identical for both techniques. Post-operative pain relief at the end of 3 months is similar in both approaches. Hence, laparoscopic LPJ is a safe and feasible option for chronic pancreatitis in a selected group of patients. However, it is a technically demanding procedure and should be performed by experienced laparoscopic surgeons.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Pham A, Forsmark C. Chronic pancreatitis: Review and update of etiology, risk factors, and management. *F1000Res* 2018;7:v1000-607.
2. Majumder S, Chari ST. Chronic pancreatitis. *Lancet* 2016;387:1957-66.
3. Cahen DL, Gouma DJ, Nio Y, Rauws EA, Boermeester MA, Busch OR, *et al.* Endoscopic versus surgical drainage of the pancreatic duct in chronic pancreatitis. *N Engl J Med* 2007;356:676-84.
4. Issa Y, Kempeneers MA, Bruno MJ, Fockens P, Poley JW, Ahmed Ali U, *et al.* Effect of early surgery versus endoscopy-first approach on pain in patients with chronic pancreatitis: The ESCAPE randomized clinical trial. *JAMA* 2020;323:237-47.
5. Ahmed Ali U, Pahlplatz JM, Nealon WH, van Goor H, Gooszen HG, Boermeester MA. Endoscopic or surgical intervention for painful obstructive chronic pancreatitis. *Cochrane Database Syst Rev* 2015;2015:CD007884.
6. Blumgart's Surgery of the Liver, Biliary Tract A – 9780323697842 Elsevier Health. MEA Elsevier Health. Available from: <https://www.mea.elsevierhealth.com/blumgarts-surgery-of-the-liver-biliary-tract-and-pancreas-2-volume-set-9780323697842.html>. [Last accessed on 2024 Aug 26].
7. Partington PF, Rochelle RE. Modified puestow procedure for retrograde drainage of the pancreatic duct. *Ann Surg* 1960;152:1037-43.
8. Kalayarasan R, Shukla A. Changing trends in the minimally invasive surgery for chronic pancreatitis. *World J Gastroenterol* 2023;29:2101-13.
9. Kurian MS, Gagner M. Laparoscopic side-to-side pancreaticojejunostomy (Partington-Rochelle) for chronic pancreatitis. *J Hepatobiliary Pancreat Surg* 1999;6:382-6.
10. Palanivelu C, Shetty R, Jani K, Rajan PS, Sendhilkumar K, Parthasarathi R, *et al.* Laparoscopic lateral pancreaticojejunostomy: A new remedy for an old ailment. *Surg Endosc* 2006;20:458-61.
11. Tantia O, Jindal MK, Khanna S, Sen B. Laparoscopic lateral pancreaticojejunostomy: Our experience of 17 cases. *Surg Endosc* 2004;18:1054-7.
12. Rege SA, Kulkarni GV, Shrinivas S, Singh A, Chiranjeev R. Laparoscopic lateral pancreaticojejunostomy for chronic pancreatitis; a single operator tertiary center experience from Western India. *Clin Surg* 2019;4:2310. Available from: <https://europepmc.org/article/med/16598404>. [Last accessed on 2024 Sep 03].
13. Senthilnathan P, Subrahmaneswara Babu N, Vikram A, Sabnis SC, Srivatsan Gurumurthy S, Anand Vijai N, *et al.* Laparoscopic longitudinal pancreaticojejunostomy and modified Frey's operation for chronic calcific pancreatitis. *BJS Open* 2019;3:666-71.
14. Sahoo MR, Kumar A. Laparoscopic longitudinal pancreaticojejunostomy using cystoscope and endoscopic basket for clearance of head and tail stones. *Surg Endosc* 2014;28:2499-503.
15. Nag HH, Arvinda PS, Sachan A, Saluja SS, Sachdeva S. Laparoscopic lateral pancreaticojejunostomy-the technique and early experience. *Indian J Surg* 2019;81:51-7.
16. Nag HH, Nekarakanti PK, Arvinda PS, Sharma A. Laparoscopic versus open surgical management of patients with chronic pancreatitis: Amatched case-control study. *J Minim Access Surg* 2022;18:191-6.
17. Rege S, Banker A, Shah S, Bhesania D. Long-term outcomes of laparoscopic longitudinal pancreaticojejunostomy and modified Frey's procedure for patients of chronic pancreatitis: A 10-year experience. *J Minim Access Surg* 2024;20:74-80.
18. Bhandarwar A, Arora E, Gajbhiye R, Gandhi S, Patel C, Wagh A, *et al.* Laparoscopic lateral pancreaticojejunostomy: An evolution to endostapled technique. *Surg Endosc* 2019;33:1749-56.
19. Khaled YS, Ammori MB, Ammori BJ. Laparoscopic lateral pancreaticojejunostomy for chronic pancreatitis: A case report and review of the literature. *Surg Laparosc Endosc Percutan Tech* 2011;21:e36-40.
20. Kim EY, Hong TH. Laparoscopic longitudinal pancreaticojejunostomy using barbed sutures: An efficient and secure solution for pancreatic duct obstructions in patients with chronic pancreatitis. *J Gastrointest Surg* 2016;20:861-6.
21. Tan CL, Zhang H, Li KZ. Single center experience in selecting the laparoscopic Frey procedure for chronic pancreatitis. *World J Gastroenterol* 2015;21:12644-52.
22. Terrace JD, Paterson HM, Garden OJ, Parks RW, Madhavan KK. Results of decompression surgery for pain in chronic pancreatitis. *HPB (Oxford)* 2007;9:308-11.
23. Laparoscopic Lateral Pancreatico-jejunostomy: An Experience from a Tertiary Care Center. Available from: <https://www.tropicalgastro.com/printerfriendly.aspx?id=2967>. [Last accessed on 2024 Sep 03].
24. Ramia JM, Azagra JS, De la Plaza R, Manuel A, Latorre R, Lopez-Marcano A. Laparoscopic longitudinal pancreaticojejunostomy for chronic pancreatitis: Systematic review of the literature. *Surgeon* 2020;18:137-41.
25. Ambore V, Vismaya KB, Rashid R. Comparative study of surgical management of chronic pancreatitis. *Int Surg J* 2023;10:1934-9.
26. Napolitano M, Brody F, Lee KB, Rosenfeld E, Chen S, Murillo-Berlioz AE, *et al.* 30-day outcomes and predictors of complications after Puestow procedure. *Am J Surg* 2020;220:372-5.
27. Frey CF, Amikura K. Local resection of the head of the pancreas combined with longitudinal pancreaticojejunostomy in the management of patients with chronic pancreatitis. *Ann Surg* 1994;220:492-504.
28. Sudo T, Murakami Y, Uemura K, Hashimoto Y, Kondo N, Nakagawa N, *et al.* Short- and long-term results of lateral pancreaticojejunostomy for chronic pancreatitis: A retrospective Japanese single-center study. *J Hepatobiliary Pancreat Sci* 2014;21:426-32.
29. 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.
30. Schnelldorfer T, Lewin DN, Adams DB. Operative management of chronic pancreatitis: Long-term results in 372 patients. *J Am Coll Surg* 2007;204:1039-45.