

Laparoscopic Cystogastrostomy in Pancreatic Pseudocyst with Minimal Invasion and Early Outcome

Mahim Koshariya, MS, Sameer Ahmed, MS, Kunal Vinayak

Department of Surgery, Gandhi Medical College and Hamidia Hospital, Bhopal, India (Drs Koshariya, Ahmed, and Vinayak)

ABSTRACT

Introduction: Pancreatic pseudocyst is a well circumscribed fluid collection, enclosed by a wall of inflammatory and fibrous tissue, arising in or adjacent to the pancreas. Pancreatic pseudocysts may occur after an episode of acute or chronic pancreatitis and in cases of pancreatic trauma. Available interventions include percutaneous, endoscopic or surgical approaches. Laparoscopy plays an important role in the management.

Case Description: Here we report a case of pseudocyst in a 30-year-old man which was successfully managed laparoscopically with good outcome.

Discussion: Small asymptomatic pseudocysts are known to regress spontaneously. Symptomatic, large or complicated pseudocysts need intervention. Laparoscopy has contributed immensely in the management of pseudocysts. It is associated with shorter hospital stay and fewer complications than traditional open methods.

Conclusion: Laparoscopic technique for drainage of pseudocysts at our hospital shows that this approach is feasible, safe and effective in the presence of trained surgeons. There is an added advantage of minimal morbidity and early discharge.

Citation Koshariya M, Ahmed S, Vinayak K. Laparoscopic cystogastrostomy in pancreatic pseudocyst with minimal invasion and early outcome. CRSLS e2018.00081. DOI: 10.4293/CRSLS.2018.00081.

Copyright © 2019 by SLS, Society of Laparoendoscopic Surgeons. This is an open-access article distributed under the terms of the Creative Commons Attribution-Noncommercial-ShareAlike 3.0 Unported license, which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original author and source are credited.

Disclosures: The authors have no disclosures.

Conflicts of Interest: All authors declare no conflict of interest regarding the publication of this article.

Informed consent: Dr. Koshariya declares that written informed consent was obtained from the patient/s for publication of this study/report and any accompanying images.

Address correspondence to: Dr. Mahim Koshariya, MS, FMAS, FIASGO, FLAGES, FAIS, FALS, Department of Surgery, Gandhi Medical College and Hamidia Hospital, Royal Market, Bhopal, Madhya Pradesh 462001, India. Telephone: +91 9826031583, Fax: +91 7554050245, E-mail: mahimk2000@yahoo.co.uk.

INTRODUCTION

Pancreatic pseudocyst is a well-circumscribed fluid collection, bounded by a wall of fibrous tissue, arising inside or around the pancreas. It is a pseudocyst because an epithelial lining on the cyst wall is absent. It was first described by Morgan.¹³

Pancreatic pseudocysts are reported in 2%–10% of patients after acute pancreatitis and in about 10%–30% of patients after chronic pancreatitis.¹ They usually appear 5–6 weeks after an acute episode.²

Pancreatic pseudocysts tend to resolve spontaneously after 4–6 weeks in most of the cases. Active management is usually required if they are larger than 6 cm or persistent or are symptomatic. Complications of pseudocysts include infection, rupture and haemorrhage, and are seen in 30%–50% of the cases.³

Available interventions include percutaneous, endoscopic, or surgical approaches.⁴ Laparoscopy plays an important role in the management of pseudocysts. Laparoscopic cystogastrostomy has been described as a safe and efficient substitute to open drainage of pseudocysts.^{4,5}

CASE REPORT

A 30-year-old gentleman came to our outpatient clinic with a mass over the upper abdomen, which was associated with abdominal pain, early satiety, and nausea. He gave a history of hospitalization for acute pancreatitis 2 months back, which was managed conservatively. On examination, he had a huge mass of 15 cm × 12 cm in his upper abdomen, which was firm in consistency (**Figure 1**). Mild tenderness was present over the mass. It did not move with respiration.

Contrast enhanced computed tomography revealed a 15 cm × 10 cm pancreatic pseudocyst pushing the stomach anteriorly and the colon inferiorly while compressing the retroperitoneal structures (**Figures 2 and 3**).

Patient was taken up for a laparoscopic cystogastrostomy under general anesthesia in supine position. A 12-mm umbilical port was made and one 10-mm port in the right hypochondrium was inserted. Two 5-mm ports were placed, one in the upper midline and one in the left subcoastal region.

A stay suture was taken on the anterior gastric wall. An anterior gastrotomy using a harmonic scalpel was made. The cyst's position was confirmed after aspiration and an opening was created in the posterior gastric wall and the anterior cyst wall. Cystic fluid was aspirated.

Cystogastrostomy was completed using a 60-mm endo articulating stapler (**Figure 4**). Anterior gastric wall was closed using a 60 mm endostapler (**Figures 5 and 6**). Histopathological examination confirmed pseudocyst wall (**Figure 7**).

Operative time was 80 minutes and there were no post-operative complications.



Figure 1. Showing a huge mass in the upper abdomen.

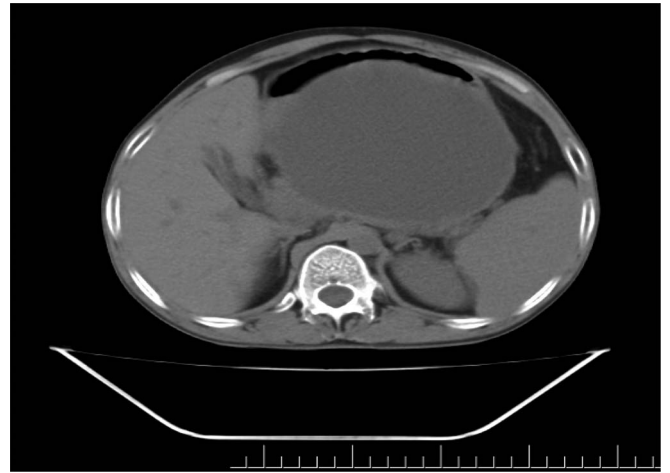


Figure 2. A well-defined, homogeneously hypodense lesion in relation to pancreatic neck, body, and tail, extending into lesser sac, displaying stomach anteriorly.

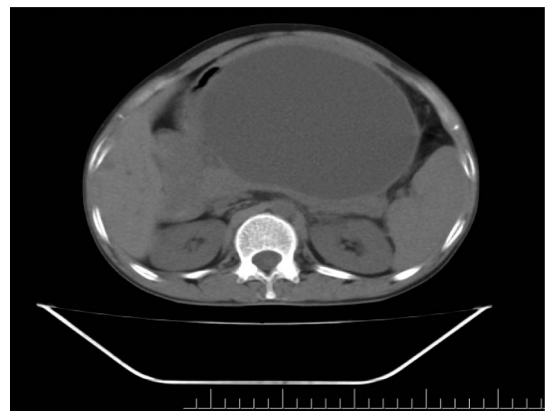


Figure 3. A well-defined, homogeneously hypodense lesion displacing the hepatic flexure of colon laterally and reaching up to splenic hilum.

Our patient was discharged on the fifth day (**Figure 8**). He has not reported any complications to us in 1.5 years of followup.

DISCUSSION

Small asymptomatic pseudocysts are known to regress spontaneously. Conservative management with rest to the bowel increases the probability of spontaneous resolution.⁶

However, some symptomatic patients need interventions. Indications for intervention for a pancreatic pseudocyst include a cyst >6 cm in diameter, >6 weeks in persistence, symptomatic patient or a complicated pseudocyst (infection, haemorrhage, rupture etc.) and a matured wall.^{4,5,7}



Figure 4. Showing 12-mm umbilical port with insertion of a 60-mm endo stapler.

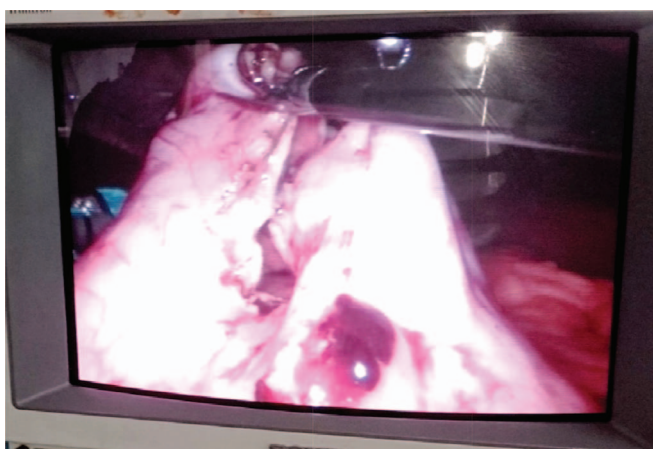


Figure 5. Showing intra-operative image.

Factors that help to determine the type and timing of intervention are location, size, maturity of the cyst wall at presentation, presence or absence of complications, and availability of technical expertise.

Conventional open drainage procedures have been routinely practiced for pseudocysts. Newer methods like endoscopic drainage and percutaneous drainage have become widely accepted and established. Since its introduction by Way et al⁸ in 1994, laparoscopy has contributed immensely in the management of pseudocysts. They practiced intraluminal cystogastrostomy. Two trocars were inserted into the lumen of the stomach, guided by a laparoscope, and a nonsutured window was made between the cyst and the posterior gastric wall. There were chances of bleeding from the cut edges of the window, hence Trías et al⁹ developed

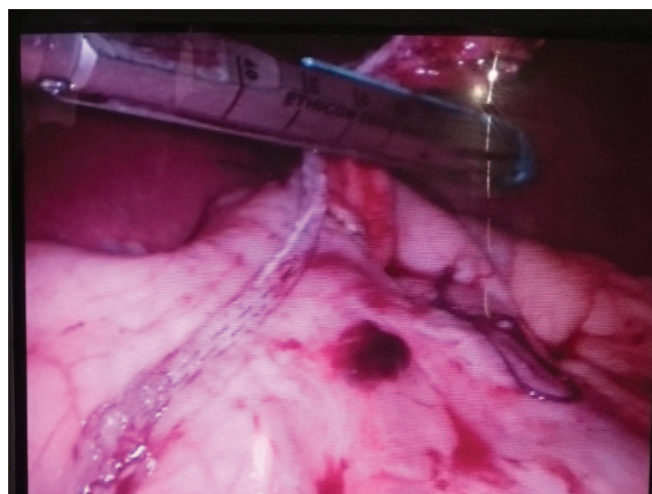


Figure 6. Showing closure of anterior gastric wall using a 60-mm endo stapler.

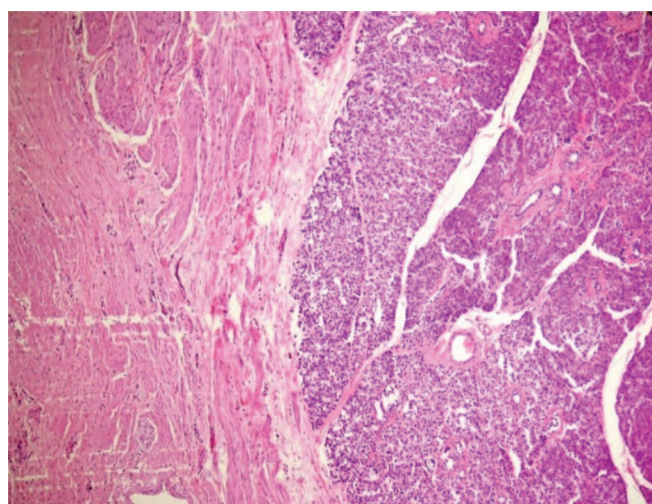


Figure 7. Histopathology of cyst wall showed: no epithelial lining; the cyst contents were composed of fibrin, necrotic fat cells, debris, and histiocytes.

stapled intraluminal gastrostomy. Endoscopic staplers help in achieving haemostasis. They also allow a wider opening between the cyst and stomach. This helps in reducing the risk of recurrence caused by obstruction of the opening between the cyst and stomach. Endoscopic stapler can also be used to close anterior gastrotomy as done in this case, in place of conventional endo suturing. Endo staplers reduce operative time as well.

A review of available literature conducted by Jang et al concluded that laparoscopic approach was associated with shorter operative time, shorter hospital stays and fewer complications than customary open methods for cyst drainage.^{6,14}



Figure 8. Postoperative image.

Laparoscopic approach is a good alternative for open surgery and it has better outcomes. However, long-term followup has not yet been carried out to compare open, laparoscopic, and endoscopic approaches, thus more randomized control trials are needed.¹⁰ The lengthiest follow up available was undertaken by Crisanto Campos et al in Mexico in which patients were followed up for 40 months after laparoscopic surgery with no reported recurrence.^{12,15}

CONCLUSION

The results obtained with the laparoscopic cystogastrostomy technique at our tertiary hospital show that this approach is feasible, safe, and effective in the presence of capable surgeons. Similar to open surgery, laparoscopic surgery can help to achieve internal drainage with synchronous debridement of necrotic tissue. There is an added advantage of minimal morbidity, and early discharge. It offers all of the benefits of a minimally invasive surgical approach while upholding all of the principles of open surgery.

References:

1. Yang CC, Shin JS, Liu YT, Yueh SK, Chou DA. Management of pancreatic pseudocysts by endoscopic cystogastrostomy. *J Formos Med Assoc.* 1999;98:283–286.
2. Surlin V, Georgescu E, Georgescu M, et al. Current therapeutic modalities of pancreatic pseudocyst. *Curr Health Sci J.* 2013;39(4):253–258.
3. Asri CJ, Jasni H, Ruzaimie MN, Kong CF, Nur Fatin ZA. Combined laparoscopic cholecystectomy and drainage of pan-

creatic pseudocyst: a case report and review of current management. *Med J Malaysia.* 2013;68(3):273–274.

4. Palanivelu C, Senthilkumar K, Madhankumar MV, et al. Management of pancreatic pseudocyst in the era of laparoscopic surgery—Experience from a tertiary centre. *Surg Endosc.* 2007; 21(12):2262–2267.

5. Aljarabah M, Ammori BJ. Laparoscopic and endoscopic approaches for drainage of pancreatic pseudocysts: a systematic review of published series. *Surg Endosc.* 2007;21(11):1936–1944.

6. Saad DF, Gow KW, Cabbabe S, Heiss KF, Wulkan ML. Laparoscopic cystogastrostomy for the treatment of pancreatic pseudocysts in children. *J Pediatr Surg.* 2005;40:e13–e17.

7. Matsutani T, Sasajima K, Miyamoto M, et al. Pancreatic cyst associated with pancreas divisum treated by laparoscopy-assisted cystgastrostomy in the intragastric approach: a case report and a review of the literature. *J Laparoendosc Adv Surg Tech A.* 2007;17(3):317–320.

8. Way LW, Legha P, Mori T. Laparoscopic pancreatic cystogastrostomy: the first operation in the new field of intraluminal laparoscopic surgery [Abstract]. *Surg Endosc.* 1994;8:235.

9. Trías M, Targarona EM, Balagué C, Cifuentes A, Taurá P. Intraluminal stapled laparoscopic cystogastrostomy for treatment of pancreatic pseudocyst. *Br J Surg.* 1995;82(3):403.

10. Bhattacharya D, Ammori BJ. Minimally invasive approaches to the management of pancreatic pseudocysts: review of the literature. *Surg Laparosc Endosc Percutan Tech.* 2003;13(3):1418.

11. Gumaste VV, Aron J. Pseudocyst management: endoscopic drainage and other emerging techniques. *J Clin Gastroenterol.* 2010;44(5):326–331.

12. Melman L, Azar R, Beddow K. Primary and overall success rates for clinical outcomes after laparoscopic, endoscopic, and open pancreatic cystgastrostomy for pancreatic pseudocysts. *Surg Endosc.* 2009;23(2):267–271.

13. Baron TH, Harewood GC, Morgan DE, Yates MR. Outcome differences after endoscopic drainage of pancreatic necrosis, acute pancreatic pseudocysts, and chronic pancreatic pseudocysts. *Gastrointestinal endoscopy.* 2002 Jul 1;56(1):7–17.

14. Eom BW, Jang JY, Lee SE, Han HS, Yoon YS, Kim SW. Clinical outcomes compared between laparoscopic and open distal pancreatectomy. *Surgical endoscopy.* 2008 May 1;22(5): 1334–8.

15. B.A. Crisanto-Campos, E. Arce-Liévano, L.E. Cárdenas-Lailson, L.S. Romero-Loera, M.E. Rojano-Rodríguez, M.A. Gallardo-Ramírez, J. Cabral-Oliver, M. Moreno-Portillo, Laparoscopic management of pancreatic pseudocysts: experience at a general hospital in Mexico City, *Revista de Gastroenterología de México (English Edition)*, 2015, 80(3):198–204.