

Original Research Article

A Prospective Comparative Study of Hand-Sewn Versus Stapler Laparoscopic Cystogastrostomy in Management of Patients of Pseudocyst of Pancreas at A Tertiary Care Centre in Central India

Ashutosh Jadhao¹, Mohammed Mudassir^{2*}, Unmed Chandak³, Anup Wakodkar⁴

¹ *Speciality Medical Officer, ESIS Hospital, Nagpur, India*

² *Senior Resident, Department of General Surgery, Govt Medical College, Gondia, India*

³ *Associate Professor, Department of General Surgery, Govt Medical College and Hospital, Nagpur, India*

⁴ *Assistant Professor, Department of General Surgery, Govt Medical College and Hospital, Nagpur, India*

Received: 17-08-2021 / Revised: 24-09-2021 / Accepted: 28-10-2021

Abstract

Introduction: A pancreatic pseudocyst is a localized collection of fluid rich in amylase, located within or adjacent to the pancreas and enclosed by a non-epithelial wall, which may develop as a consequence of pancreatic inflammation or injury. Pancreatic pseudocysts are the most common complication of acute or chronic pancreatitis. The first description of a pancreatic pseudocyst is attributed to Morgagni in 1761. **Objectives:** To compare various intra-operative parameters and post-operative outcomes in patients with pancreatic pseudo cyst undergoing Laparoscopic cysto gastrostomy either Hand sewn or Stapler use. **Materials and methods:** It's a prospective study in which all pancreatic pseudo cyst patients who underwent laparoscopic cysto gastrostomy with hand sewn and stapler (Green stapler 65mm) use at our institute were compared in terms of intra-operative parameters, duration of surgery and post-operative outcomes. Patients who managed by other interventions were excluded. **Results:** 12 patients in each group of hand sewn and of stapler used in LCG were enrolled. Stapled LCG was associated with significantly shorter operative time than hand sewn LCG. There was no significant post-operative pain and fever in both groups, no leak, no recurrence, no fistula in both groups. Both groups had shorter duration of postoperative hospital stay. Patients were followed up in OPD for 6 weeks. Cyst resolved in all patients. Endo GI stapler is costlier than Hand sewn method, and considering poor patients in our settings, stapler LCG was not cost effective. **Conclusion:** Stapler LCG was associated with significantly shorter operative time than hand sewn LCG. Use of stapler is costlier as compared to Hand sewn as the cost of stapler is more and considering poor patients in our settings, stapler LCG is not cost effective.

Keywords: pancreatic pseudocyst, Stapler LCG, laparoscopic cysto gastrostomy, Hand sewn.

This is an Open Access article that uses a fund-ing model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

A pancreatic pseudocyst is a localized collection of fluid rich in amylase, located within or adjacent to the pancreas and enclosed by a non-epithelial wall, which may develop as a consequence of pancreatic inflammation or injury[1]. Pancreatic pseudocysts are the most common complication of acute or chronic pancreatitis. The first description of a pancreatic pseudocyst is attributed to Morgagni in 1761[2]. Dentu reported the first attempt at percutaneous management of pseudocyst in 1865[3]. Bowsman described the first case treated operatively in 1882. 4 Pancreatic pseudocysts constitute about 70-80% of all masses in the pancreas. Initial management is conservative, expecting spontaneous resolution[4]. Most of the pseudocysts are asymptomatic and resolve spontaneously. Treatment is required only in the case of persisting pancreatic pseudocysts causing symptoms such as abdominal pain, complicated with infection or compression of the gastrointestinal tract, pancreatic duct or the common bile duct.

The standard drainage procedure is cysto gastrostomy by laparotomy[5]. This is associated with a significant morbidity like pain, ileus, prolonged hospital stay and late wound complications like incisional hernia[6]. The main objectives of the study were to compare various intra-operative parameters and post-operative outcomes in patients with pancreatic pseudo cyst undergoing Laparoscopic cysto gastrostomy either Hand sewn or Stapler use.

Materials and Methods

It's a prospective study in which all pancreatic pseudocyst patients who underwent laparoscopic cysto gastrostomy with hand sewn and stapler (Green stapler 65mm) use at our institute were compared in terms of intra-operative parameters, duration of surgery and post-operative outcomes. Patients who managed by other interventions were excluded.

Statistical Analysis: Data was entered in Microsoft excel sheet and analysed using statistical software Epi Info.(7.2.1.0). Chi square test was applied for categorical data. P value < 0.05 was considered significant. Results were analyzed by using SPSS 26.0 software

Results

There were 12 patients in each group of hand sewn and stapler use in laparoscopic cystogastrostomy.

Table 1: Intra-operative Parameters (numbers indicate no. of patients, CG- Cysto-Gastrostomy)

	Stapler CG = 12	Hand sewn CG = 12	P Value
Number of cyst *	Single - 10 Multiple – 2	Single -10 Multiple – 2	
Intraoperative bleeding in ml # (mean ± SD)	64 ± 8	72 ± 14	

Blood Transfusion	2(not because of intra-operative loss)	4 patients(not because of intra-operative loss)	
Drained Fluid *	Sterile - 11 Infected – 1	Sterile - 11 Infected – 1	
Operative time in minutes # (mean ± SD)	70 ± 16	91 ± 22	<0.000
Length of stay in days (mean ± SD)	4.92 ± 0.57	5.04 ± 0.6	

Blood loss in both groups was minimal (less than 90 ml per procedure) and none required blood transfusion because of intra-operative loss.

The median operating time of Stapler LCG (Laparoscopic Cysto-Gastrostomy) was significantly shorter than that of Hand sewn LCG.

Table 2: Post-operative parameters

	Stapler LCG(n=12)	Hand sewn LCG(n=12)	P value
Post operative fever *	Present-1 Absent-11	Present-2 Absent-10	0.34
Pain *	Yes-1 No-11	Yes-3 No-9	0.02
Bleeding	No	No	
Leak	No	No	
Recurrence	No	No	
Fistula	No	No	
Death	0	1	
Operative Cost	More	Less	

t Test – to compare the means between 2 groups

* Chi square test

There was no significant post-operative pain and fever in both groups, no leak, no recurrence, no fistula in both groups.

The details of the postoperative complications are listed in Table.

Both groups are associated with shorter duration of postoperative hospital stay.

Table 3: Follow up summary

	Stapler LCG	Hand sewn LCG
Patients Who Attended (No.)	12	12
Follow-Up Duration	6 weeks	6 weeks
Cyst Resolution (No.)	12	12
Recurrent Symptomatic PP	0	0

All patients were followed up on OPD basis with durations described above. For follow up, clinical examination and USG abdomen was done in every patient. There was cyst resolution in all patients of each group

Discussion

Management options available for pancreatic pseudocysts include endoscopic, radiologic (percutaneous), surgical (open surgery or laparoscopic drainage), and conservative (medical) treatment. The traditional treatment for pancreatic pseudocyst has been surgical which has proven to be therapeutically effective and was considered the gold standard[8]. In recent years, there have been rapid gains in lesser invasive interventional techniques. Endoscopic drainage is a recent intervention that provides continuous drainage via an endoprosthesis stent or a nasocystic tube placed in a fistulous tract between the upper GI tract and the pseudocyst[9]. It was initially only applied in cases of well-defined compression resulting from the pseudocyst. If the pseudocyst involves the gastric wall (e.g., the mucosa in the prominence emerges with a dark colour or “mosaic” sign), this treatment will be even more efficient. However, because it is a blind procedure, the risk of complications remained high until the introduction of therapeutic EUS[10]. Surgical stapling was first introduced by Hüttl, in 1908; but their use has grown since the introduction of new disposable instruments in the past 35 years. Various studies have comparable results in terms of duration of procedure, anastomotic leak and mortality. Matos systematically reviewed nine studies involving 1233 patients (622 stapled and 611 hand-sewn) and found that the leaks were 13% versus 13.4%. Clinically it was 6.3% versus 7.1% and radiologically it was 7.8% versus 7.2%. There was insufficient evidence to demonstrate superiority of either technique. The decision over which technique to use must be judged on the basis of previous experience, clinical, and available radiological resources. The routine use of stapling

instruments for infra-peritoneal colorectal anastomosis could not be recommended because of a higher incidence of strictures, even though the operation having less time to perform and anastomotic leakage occurred less often. Based on this data, there was a controversy between the surgeons in practicing hand sewn or stapler anastomosis[10]. The parameters namely age, duration of procedure, return of bowel sounds, starting of oral feeds, hospitalization in days, return to work in months, anastomotic leak and mortality in hand sewn anastomosis compared with stapler anastomosis; in the four groups of gastrointestinal surgeries namely subtotal gastrectomy and gastrojejunostomy, right hemicolectomy, low anterior resection and other resection and anastomosis of intestines.

Conclusion

Stapler LCG was associated with significantly shorter operative time than handsewn LCG. Use of stapler is costlier as compared to Handsewn as the cost of stapler is more and considering poor patients in our settings, stapler LCG is not cost effective.

References

1. Warshaw AL, Rattner DW. Timing of surgical drainage for pancreatic pseudocyst. Clinical and chemical criteria. *Ann Surg.* 1985; 202:720-4.
2. Bradley EL, Clements JL Jr, Gonzalez AC. The natural history of pancreatic pseudocysts: a unified concept of management. *Am J Surg.* 1979; 137:135-41.
3. Weckman L, Kylanpaa ML, Puolakkainen P, Halttunen J. Endoscopic treatment of pancreatic pseudocysts. *Surg Endosc.* 2006; 20:603-7.
4. Spivak H, Galloway JR, Amerson JR, Fink AS, Branum GD, Redvanly RD et al. Management of pancreatic pseudocysts. *J Am Coll Surg.* 1998; 186:507-11.

5. Sharma SS, Bhargawa N, Govil A. Endoscopic management of pancreatic pseudocyst: a long-term follow-up. *Endoscopy*. 2002; 34:203-7.
6. Smits ME, Rauws EA, Tytgat GN, Huibregtse K. The efficacy of endoscopic treatment of pancreatic pseudocysts. *Gastrointest. Endosc.* 1995; 42:202-7.
7. Mori T, Sugiyama M, Atomi Y, Way LW. Laparoscopic pancreatic cystgastrostomy. *J Hepatobiliary Pancreat Surg.* 2000; 7:28-34.
8. Park AE, Heniford BT. Therapeutic laparoscopy of the pancreas. *Ann Surg.* 2002; 236:149-58.
9. Chowbey PK, Baijal M, Vashistha A. Laparoscopic intragastric stapled cystogastrostomy for pancreatic pseudocyst. *J Laparoendosc Adv Surg Tech A.* 2001; 11:201-5.
10. Pekmezci S, Sarıbeyoğlu K, Karahasanoğlu T, Taşçı H. Total laparoscopic cystogastrostomy for the treatment of pancreatic pseudocyst. *J Laparoendosc Adv Surg Tech A.* 2002; 12:119-22.

Conflict of Interest: Nil

Source of support: Nil