

LAPAROSCOPIC MANAGEMENT OF PANCREATIC PSEUDOCYSTS A NOVEL TECHNIQUE USING TITANIUM CLIPS: OUR EXPERIENCE.

A.S.Gogate, Rahul Kenawadekar, Vandana A Frigate**, Santosh Hajare*, G. Varun

Department of *Medical Gastroenterology, **Anaesthesiology & General Surgery

Jawaharlal Nehru Medical College, Belgaum, Karnataka, India-590001

ABSTRACT

Pseudocysts of pancreas is collection of fluid in the lesser sac enclosed by a wall of fibrous or granulation tissue as a consequence of acute pancreatitis, pancreatic trauma or chronic pancreatitis. Invasive drainage procedures are currently indicated in those patients with symptoms or complications. We present our experience of 26 cases of pseudocyst of pancreas managed laparoscopically between Nov-2014 to March-2016 using different techniques of anastomosis using Vicryl 2-0 continues sutures as well as using Titanium clips for creating stoma between anterior wall of pancreatic pseudocyst and posterior wall of stomach. Laparoscopic cysto-gastrostomy appears to be safe and effective approach for internal drainage of pancreatic pseudocyst. It also facilitates the debridement of the necrotic tissue from the cyst cavity. Use of Titanium clips can be an alternative to conventional sutured cystogastrostomy and stapled cystogastrostomy, as it is less time consuming, easy to perform and cost effective.

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Address for correspondence

Dr. Rahul Kenawadekar

Department of General Surgery
Jawaharlal Nehru Medical College,
Belgaum, Karnataka, India

Email: dr.rahuldk@gmail.com

Phone no: +91-8970638114

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INTRODUCTION

The Atlanta International Symposium On Acute Pancreatitis Defines Pancreatic Pseudocyst as fluid Collection > 4 wks old that are surrounded by a Non epithelial wall of Fibrous or granulation tissue arising as a consequence of Acute Pancreatitis, Chronic pancreatitis, or Pancreatic Trauma. 1 It was First Described by Morgagni and Accounts for 75% of cystic lesions of the Pancreas. Incidence Following Acute Pancreatitis ranges from 12-55% in different case series. Whereas patients who have development of necrotizing Pancreatitis, with resulting necrosis of pancreatic gland or peripancreatic tissues, do not present with a pseudocyst but instead with a "Walled-off necrosis"(WON). These two entities are often confused in clinical and research communications, and each carries a different management algorithm and prognosis. 2 Once the diagnosis of pseudocyst is established, the next step is to decide when and how to intervene. Cysts larger than 5cms and Presenting after 4wks of Acute Pancreatitis are unlikely to resolve spontaneously and incidence of Complications also increases after this period.

Minimally invasive approaches are now considered standard of care, so optimal management necessitates a multidisciplinary approach. First Laparoscopic Cystogastrostomy was performed by J.Petelin in 1994. 3

MATERIALS AND METHODS:

We had 25 consecutive cases of pancreatic pseudocysts which were managed laparoscopically between Nov 2014 to March 2016. Out of which 21 were male patients and 4 female. Age of the patients were between 25 to 70 yrs. Informed consent was taken from each patient for laparoscopic cystogastrostomy or conversion to open procedure.

Indications for laparoscopic internal Drainage of Pancreatic Pseudocyst:

Indication	No of Patients
1) Pseudocyst Persisting for more than 6 wks	16
2) Patients with persistent Pain	06
3) Signs of Pseudocyst infection	02
4) Enlarging size of cyst on serial CT imaging	00
5) Patients with Gastric / Duodenal	01
6) Persistent cyst and drain after ct guided Drainage	01

Table.1 Indications for Drainage of Pancreatic Pseudocyst:

INVESTIGATIONS DONE:

Routine pre-operative investigations: Complete blood picture, Renal function tests, Liver function tests, Serum amylase and lipase levels, Coagulation profile.

RADIOLOGICAL:

CT Scan abdomen and pelvis plain and contrast, Chest X-ray PA view.

OPERATIVE TECHNIQUE:

Position of Patient: The patient is placed in Modified Lithotomy. The operating surgeon stands between the

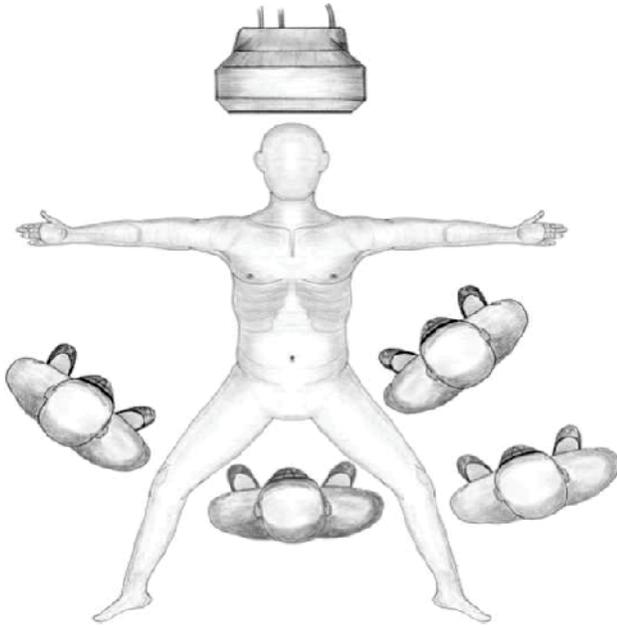


Figure 1: Position of the patient.

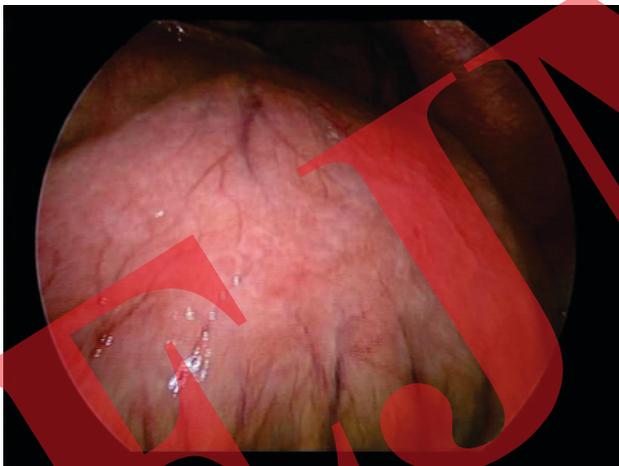


Figure 2: Bulge over anterior wall of stomach

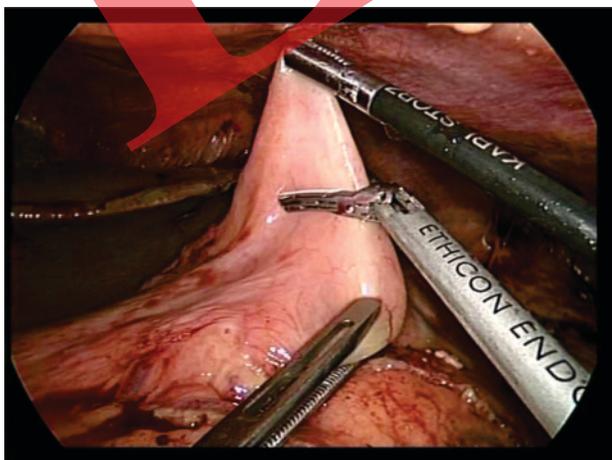


Figure 3: Anterior wall of stomach being opened by monopolar cautery

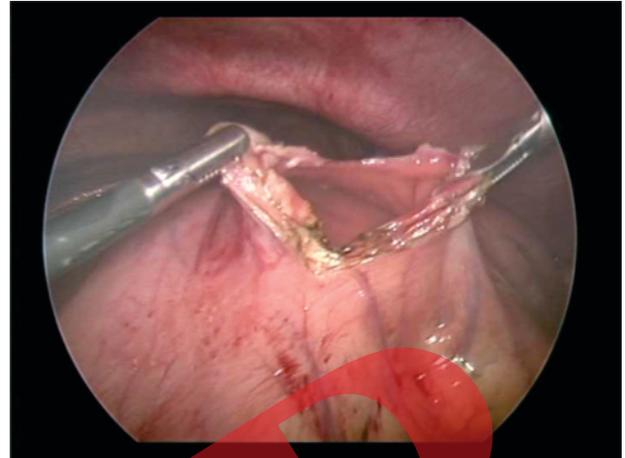


Figure 4: Anterior wall of stomach being opened by harmonic.

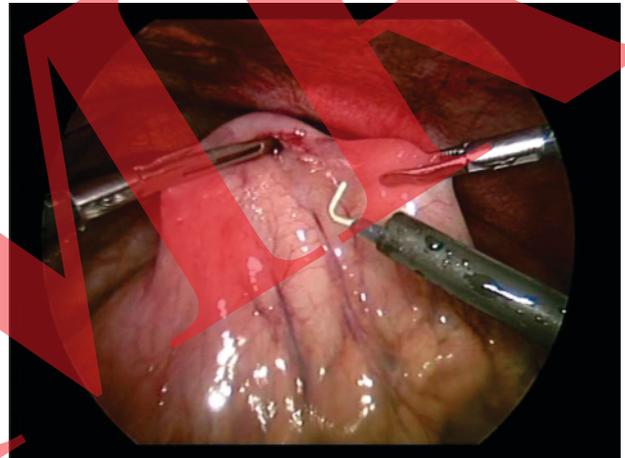


Figure 5: Anterior wall of stomach is opened

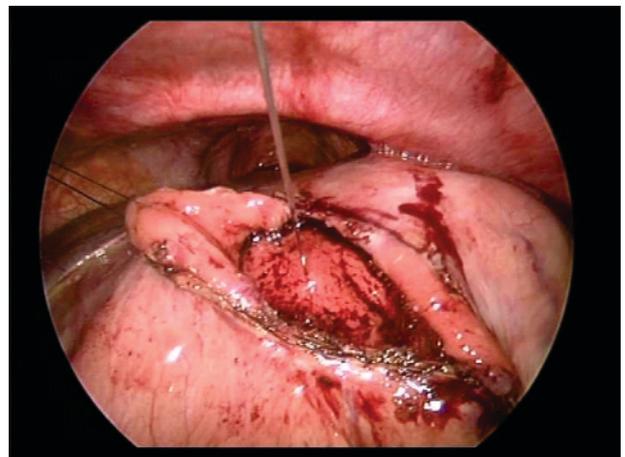


Figure 6: Position of cyst confirmed by spinal needle.

legs with camera surgeon on the right side and first assistant on the left of the patient and scrub nurse is to the right of operating surgeon (Figure 1). First 10 mm camera port is inserted through a umbilical incision using an open Hasson's surgical technique. Carbon

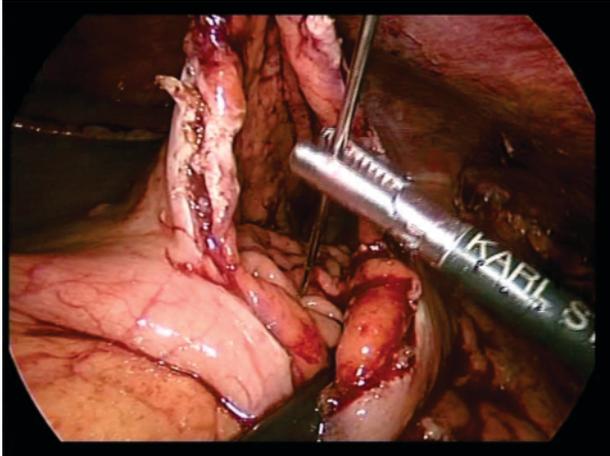


Figure 7: Position of cyst confirmed by spinal needle.

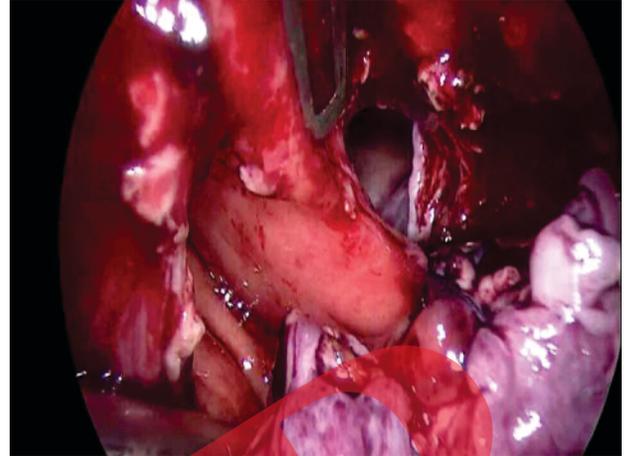


Figure 10: Posterior wall is opened.

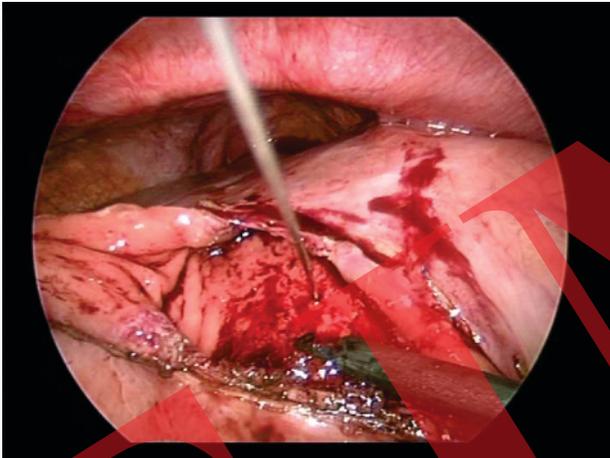


Figure 8: Posterior wall being opened by monopolar cautery.

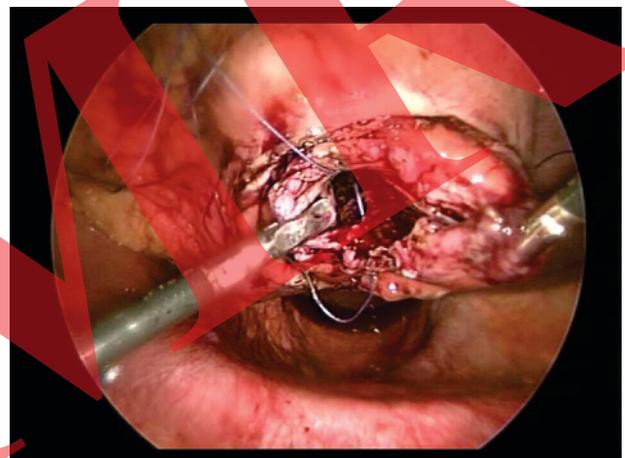


Figure 11: Creating stoma with Vicryl.



Figure 9: Posterior wall being opened by Harmonic.

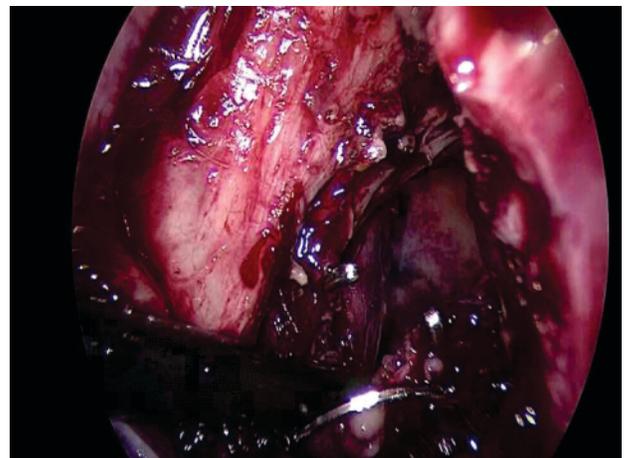


Figure 12: Creating stoma with titanium clips.

dioxide is then insufflated to create a pneumoperitoneum with pressure maintained at 14 mmHg. A 30-degree side-view laparoscope was used in all cases. A second 10mm port is inserted over the left mid clavicular line, a 5 mm port is placed in the

right mid clavicular line and two 5 mm ports were inserted on either side in anterior axillary line under vision. The bulge over the anterior wall of the stomach is seen (Figure 2). Stay sutures are taken on either side of the anticipated gastrostomy site with Vicryl 2-0 sutures. The Anterior wall of Stomach is opened using

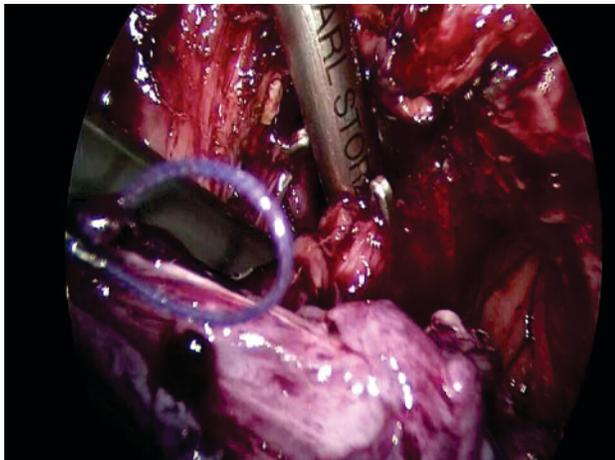


Figure 13: Creating stoma with titanium clips.

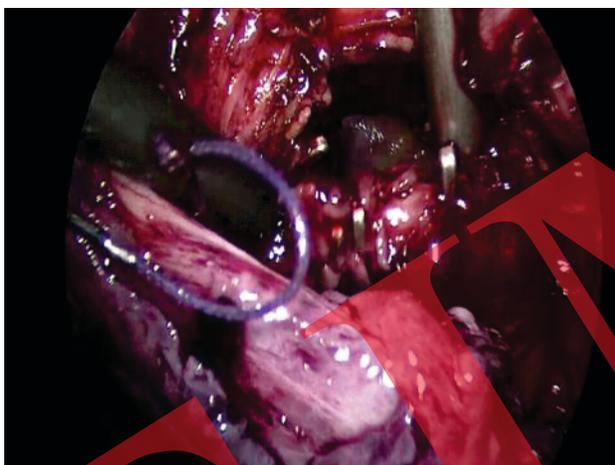


Figure 14: Creating stoma with titanium clips.

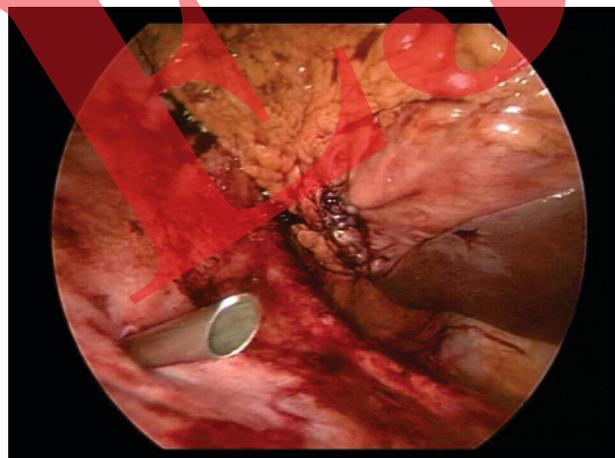


Figure 15: Anterior wall of stomach is closed with vicryl.

either monopolar cautery hook or Harmonic Scalpel (Ethicon Endosurgery) (Figure 3,4 &5). The bulge was seen on the posterior wall of the stomach. Position of the cyst and the nature of fluid is confirmed by inserting a spinal needle through the posterior wall of

stomach into cyst cavity (Figure 6). The fluid aspirated was sent for culture and sensitivity. Then the posterior wall of stomach is opened along longitudinal axis of stomach with the needle as a guide by either monopolar Cautery or Harmonic Scalpel (Ethicon Endosurgery) (Figure 7 & 8). Once the cyst wall is opened the contents of the cyst are evacuated with suction. The cyst cavity is examined for any necrotic tissue or debris and is thoroughly rinsed with saline and sucked out (Figure 10).

Techniques of Stoma Creation: Using Vicryl 2-0 Suture material posterior wall of stomach can be approximated with the wall of pseudocyst in by intracorporeal suturing (Figure 11). About 4 to 5 Titanium LT 400 Liga clips can be applied over the posterior stomach wall and anterior wall of the Pseudocyst to create the stoma. We take a single suture at either 6'clock or 12'clock position between posterior wall of stomach and anterior wall of pseudocyst, which acts as a stay suture and makes it really easy to apply the Liga Clips.

The Anterior stomach wall is closed by Continuous intracorporeal suturing with Vicryl 2-0 (Figure 12).

The most common indication for cysto gastrostomy was persistent cyst >6weeks in our series. All patients derived the benefits of laparoscopy i.e. decreased post-operative pain, early return to oral intake, and decreased hospital stay.

One patient in our series developed a recurrent pseudocyst two months after the surgery. This patient had a pancreatic duct stent inserted pre-operatively. Blockage of the stent was the probable cause of recurrence after the surgery. Surprisingly even this patient underwent a successful second laparoscopic cysto-gastrostomy. Subsequently the pancreatic duct stent was remove 2 weeks after surgery.

Total no of Patients	25
Mean Operative Time	90 minutes
Start of oral feeding	On day 2
Post operative hospital stay	3 days
Conversion to open	None
Recurrences	None

Table 2 : Result

Necrosectomy was required in four patients. All these patients has substantial necrotic material. One patient had a persistent drain output of >100 ml for 6 weeks after a CT guided drainage procedure. Repeat CT scan revealed a persistent cyst of 12 cm in size. This patient underwent a laparoscopic cysto-gastrostomy. The pre-operative drain decreased and output stopped 1 week po-operatively.

During the follow-up of 24-30 months there was only one recurrence as described above. Also there were no conversion to open or any major post-operative

complications.

DISCUSSION

Treatment of pancreatic pseudocyst has traditionally been surgical and it remains the principle method of treatment. However the new and innovative therapies like endoscopic internal fistula formation, percutaneous aspiration have been developed, but have not attained popularity due to prolonged treatment period and higher incidence of recurrence. 3 Park and Coworkers described 28 patients who underwent Laparoscopic Cysto-gastrostomy / Cysto-jejunoscopy with 1 conversion to open, Mean operating time of 2.8hrs, Mean post-operative length of stay being 4.4 days. Palanivelu and associates described 90 patients who underwent Laparoscopic Cystogastrostomy with mean Operative time being 86 mins, and one patient having recurrence^{4,5}.

The Window between the stomach and Cyst can be created in two ways:

- A) By Circumferential Suturing of the Edges with Absorbable interrupted intracorporeal Knotting. ^{6,7}
- B) By Endo GIA Staple Cutting devices. ⁸

During our initial procedures of laparoscopic cystogastrostomy when liga clips were applied for hemostasis. We realize this could be done also to create the stoma. Our technique is to use the titanium 400 Clips to approximate the posterior stomach wall and anterior wall of the pseudocyst. This is less time consuming and easy to perform when compared to the endosuturing. Also the cost of the procedure reduces considerably when compared with stapled laparoscopic cystogastrostomy.

CONCLUSION

Laparoscopic cysto-gastrostomy appears to be safe and effective approach for internal drainage of pancreatic pseudocyst and also facilitates the debridement of the necrotic tissue from the cyst cavity. Adequate Stoma between the cyst and the Stomach is considered vital to prevent further fluid accumulation. Use of Titanium Clips can be an alternative to conventional sutured cystogastrostomy and stapled cystogastrostomy, as it is less time consuming and

easy to perform and cost effective. Also use of Titanium clips could bridge the gap between a beginner venturing into advanced laparoscopy and an expert surgeon apt in endosuturing. this could potentially decrease the steep learning curve of performing advanced laparoscopic procedure of laparoscopic cysto-gastrostomy.

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