



ENDOSCOPIC VS OPEN APPROACH TO PANCREATIC PSEUDOCYST DRAINAGE: A TWO CENTRE EXPERIENCE

General Surgery

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ABSTRACT

Pancreatic pseudocyst is one of the most common sequelae to pancreatitis and the most common approach to it is surgical cystogastrostomy. There are less invasive methods and this study aims to compare endoscopic vs open surgical cystogastrostomy as a two centre experience as there is no overall consensus on the approach especially in Indian context.

20 patients with chronic pancreatitis and symptomatic pseudocyst diagnosed according to ATLANTA classification were included in study. 10 underwent surgical management and 10 underwent EUS guided drainage.

Patients were followed up over a period of 6 months to check for pseudocyst recurrence. The primary outcome was treatment success- defined as resolution of pseudocyst and symptoms and complications. Secondary outcomes evaluated were length of hospital stay and recurrence of collection.

Both endoscopic and surgical approach had 100% success rate. In the surgical group one patient developed wound dehiscence and 1 developed recurrence of pseudocyst. No such incident noted in the endoscopic group. Hospital stay was found to be lower in the group treated via endoscopic approach (mean 3 days, p value 0.0006).

This study demonstrates that EUS guided cystogastrostomy is a valid approach to pancreatic pseudocyst.

KEYWORDS

Pancreatic pseudocyst, open cystogastrostomy, EUS guided cystogastrostomy

INTRODUCTION

Pancreatic fluid collections (PFCs) can be divided according to the revised Atlanta classification as acute (<4 week after the pancreatitis episode) or chronic (>4 weeks after the pancreatitis episode). Chronic fluid collection can be further classified as Pseudocyst or 'Walled-Off' Pancreatic Necrosis (WOPN) depending on the amount of necrotic debris. Most PFCs are asymptomatic and rarely require intervention; however, when PFCs are symptomatic causing abdominal pain, nausea, and vomiting secondary to gastric outlet obstruction, biliary obstruction, or fever secondary to an infection, drainage is indicated.³

Pancreatic pseudocyst is one of the most common complications of acute, chronic or traumatic pancreatitis.^{2,4} They are amylase rich fluid collection with a well defined wall and an absence of necrosis or solid components, most commonly present in patients with chronic pancreatitis.⁴ Most common approach towards pancreatic pseudocysts is open exploration and cystogastrostomy. There are less invasive methods which include percutaneous drainage, laparoscopy and endoscopic drainage which may lead to better outcomes.⁵ There is overall a lack of comprehensive study comparing the above regimes in the Indian context. This study aims to compare the outcomes of various approaches to pancreatic pseudocyst drainage and gauge the efficacy of each in terms of hospital stay, pain, recurrence and complications.

MATERIALS AND METHODS

An observational prospective study was conducted comprising of 20 patients with symptomatic pancreatic pseudocyst as a sequelae of chronic pancreatitis. 10 patients underwent EUS guided cystogastrostomy and 10 patients underwent surgical cystogastrostomy. All patients underwent routine pre operative investigations and CT scan. Patients excluded from this study were those with pregnancy, ASA grade IV and above, multiloculated and multiple pseudocysts.

Endoscopic Cystogastrostomy

Patients were induced under Total Intravenous Anesthesia (TIVA) and pre procedure IV cefoperazone sulbactam 1.5 gm given. EUS scope was introduced in stomach and pseudocyst was identified. Interposed blood vessels are identified by colour doppler imaging. The pseudocyst was then punctured under the EUS guidance with the 19-gauge EUS FNA needle.

A straight guide wire is advanced over the needle under fluoroscopic

guidance and allowed to coil up twice inside the pseudocyst. 10Fr cystotome was inserted over guidewire to create the cystotomy tract. The cystotomy was then dilated with a 6mm Hurricane balloon. 10 Fr * 10 cm DPT plastic stent was then deployed with fluoroscopic and endoscopic guidance.

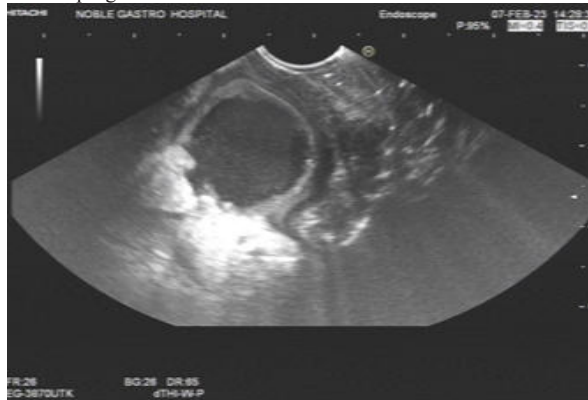


Fig 1. Endoscopic USG showing pseudocyst



Fig 2. Creating cystogastrostomy

The stents were removed after 3 months when there was resolution of collection. In patients with suspected ductal leak on imaging or

presence of pancreatic duct stricture, ERCP with transpapillary stent placement bridging the site of leak was done. In patients with disconnected pancreatic duct, transgastric stent was not removed and kept indefinitely.⁶

Technique Of Cystogastrostomy

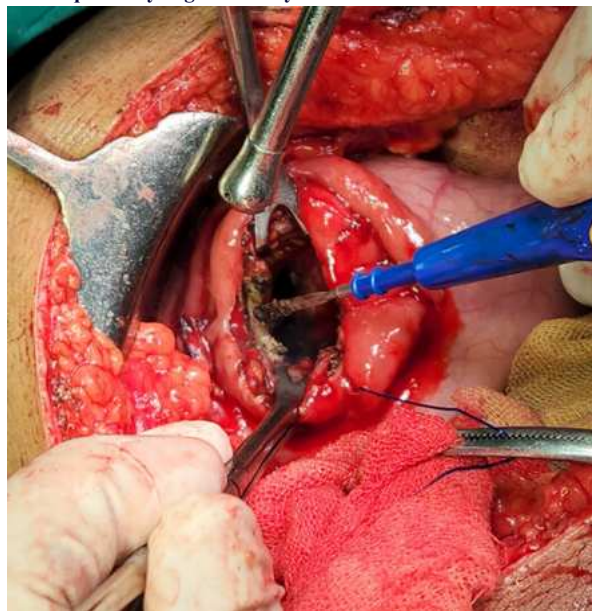


Fig 3. Open cystogastrostomy

Patient was induced under general anesthesia and pre operative IV cefoperazone sulbactam 1.5 gm stat given. A midline vertical incision was given from the xiphoid process to the umbilicus to access the abdomen. Anterior gastric wall is opened and syringe aspiration is done through the posterior wall into the pseudocyst. An elliptical incision is made perpendicular to the long axis of the stomach, the four quadrants of cystogastrostomy secured then with full thickness 2-0 synthetic absorbable suture. Apposition sutures are then taken on the cut edges and anterior gastrotomy closed.

Technique of cystojejunostomy Roux-en-Y limb of jejunum was taken for cystojejunostomy. Drainage was carried directly through the transverse mesocolon, when the pseudocyst presented through it. The jejunum is divided 20-30 cm from the Duodenojejunal flexure and the blind end closed in two layers. An elliptical incision is made in the pseudocyst wall and a transverse side to side anastomosis is constructed. Mesenteric defects are closed and a side to side jejunojunction created.

Repeat CT scan of Abdomen was carried out at 4 weeks to look for resolution of collection and further follow up imaging was carried out as and when necessary for recurrence collection. A repeat intervention was planned for patients who failed treatment or in who symptoms recurred.

Patients were followed up over a period of 6 months. Treatment success was defined as resolution of collection at 4 weeks without any need for re intervention, and the patient being asymptomatic. Complications, need for re intervention, recurrence of collection and length of hospital stay was also taken into account.

Following the remission of the first presentation, recurrence was defined as new-onset symptoms in the context of a pancreatic fluid accumulation on CT imaging. At the 4-week outpatient follow-up evaluation, clinical symptom reduction was considered a sign of a successful surgical treatment. The definition of complete resolution or a reduction in the size of the fluid collection to 2 cm or smaller on CT in conjunction with relief of symptoms at the 8-week outpatient follow-up evaluation was used to determine the efficacy of the endoscopic treatment.⁷ At the end of 6 months follow up with CT abdomen was done to check for recurrence and status. Patients whose drainage mode changed, required a second intervention, or died as a result of the treatment were regarded to have failed the treatment. Re-intervention was defined as the requirement for a second surgery,

endoscopic intervention or percutaneous drainage because of persistent symptoms and a residual pseudocyst that was at least 50% the size of its initial size on follow-up imaging. The period from the day of a surgical or endoscopic cystogastrostomy till discharge was referred to as the length of hospital stay.⁸

RESULTS:

A total of 20 patients were taken into this study out of which 19 were males and 1 was female. The mean age was 38.7 (8-62). Alcohol was the cause in 18/20 (90%) patients, The other two being gallstones and trauma. Open surgical treatment as well as endoscopy was successful in all the patients taken into consideration. In the surgical group, 9 out of 10 patients had no complications (90%) while 1 patient developed wound dehiscence and was treated with debridement and local antibiotics. 1 patient developed recurrence due to repeat consumption of alcohol and was managed with endoscopic cystogastrostomy. In the endoscopic group treatment was successful in all the patients and no patients had recurrence or complications. None of the patients underwent ERCP with transpapillary stenting. In all the patients, transpapillary stent was removed after complete resolution of pseudocyst. Repeat CT scan at the end of 2 months revealed complete resolution of pseudocyst in all the patients. Overall, duration of hospital stay was shorter for patients in the endoscopic group compared to surgical group.

Table: Outcomes Of Surgical vs EUS Guided Intervention In A 6 Month Follow Up Evaluation

Variable	EUS guided (n=10)	Percentage (%)	Open (n=10)	Percentage (%)	p- value
Treatment success	10	100	10	100	-
Treatment failure	0	-	0	-	-
Recurrence	0	-	1	10	0.24
Reintervention	0	-	1	10	0.24
Hospital stay (median)	3 (2-4)	-	6 (3-11)	-	0.0006
Complications	0	-	1	10	0.24

DISCUSSION

The management of pancreatic pseudocysts may be done conservatively with medications, surgically (open or laparoscopic drainage) or endoscopic guided. In the recent years consensus has been changed in the management with advent of endoscopic ultrasound guided drainage as it is minimally invasive and equally efficacious.

Alcohol is found to be the most common cause associated with chronic pancreatitis presenting with pseudocyst.^{9,10} Similarly, in our study alcohol was the cause for chronic pancreatitis in 90% of cases.

Varadarajulu et al found out the hospital stay associated with EUS guided intervention (mean 2 days) is less than open cystogastrostomy (mean 6 days).⁸ Melman et al found out similar results in terms of hospital stay.¹¹ This study demonstrates that patients managed endoscopically can be discharged home at an earlier time. Reintervention rates was found to be 5% in both open and EUS guided intervention according to Varadarajulu et al.⁷ Over the course of a 6-month follow-up period, no instances of pseudocyst recurrence were observed in patients who underwent endoscopic cystogastrostomy in our study. The tract created during the endoscopy procedure tends to close rapidly after the removal of the stent. Another factor contributing to the variation in treatment outcomes among patients undergoing endoscopic cystogastrostomy is the inconsistency in the definition of pancreatic fluid collections being treated. Patients with necrotic collections are prone to developing infections when intervened endoscopically, resulting in lower treatment success rates. Consequently, if these patients were included in the study, the rates of complications, re-interventions, and length of hospital stay for endoscopy would likely be higher. Thus, patients with WOPN were not included in our study. With the introduction of endoscopic ultrasound (EUS), even pseudocysts that do not cause luminal compression can be identified and drained under real-time imaging guidance, resulting in a technical success rate of 100% in our study.^{12,13} We believe that the favorable outcomes observed with endoscopy in this study can be attributed to the implementation of a standardized, multistep treatment protocol, which included thorough screening of study subjects using cross-sectional imaging, the utilization of EUS to enhance technical

success, treatment of associated pancreatic duct leaks with stenting, and the retention of transgastric stents in patients with disconnected ducts.

CONCLUSION

In conclusion, both endoscopic and open surgical cystogastrostomy were comparable in terms of success rate although endoscopic treatment is associated with shorter hospital stay. Larger sample size is required to validate the results of this study.

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