Original Research Article

DOI: http://dx.doi.org/10.18203/2349-2902.isj20172758

Laparoscopic cysto-gastrostomy for management of pancreatic pseudocyst. Single center experience in upper Egypt

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Received: 04 June 2017 **Revised:** 12 June 2017 **Accepted:** 16 June 2017

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ABSTRACT

Background: One of the most common lumps of the pancreas is the pancreatic pseudocyst, with an estimated incidence of 70-80%. There are two main options for treatment pancreatic pseudocyst if it persists beyond six weeks and not respond to conservative treatment, surgical (laparoscopic and conventional open surgery) and non-surgical treatment (endoscopic and percutaneous drainage through ultrasonography or computed tomography guide). The objective of this study was to evaluate the outcome of laparoscopic pancreatic cystogastrostomy for pancreatic pseudocyst as regard operative and postoperative results in Sohag university Hospitals.

Methods: This was a prospective observational single center study at the General surgery department Sohag University Hospitals, Egypt. The study populations were patients suffering from pancreatic pseudocyst attend to the outpatient clinic from March 2014 to March 2017. All patients were evaluated by history taking, physical examination, laboratory investigation and imaging evaluation by abdominal ultrasonography and contrast enhanced computed tomography of the abdomen.

Results: Between March 2014 and March 2017, 14 patients with pancreatic pseudocyst had fulfilled our inclusion criteria and included in this study. 8 patients were female and 6 patients were male. 12 patients had previous history of acute biliary pancreatitis at least 6 months before the operation. 2 patient had undetermined pancreatitis. The mean age of the patient was 45.5 ± 1.8 years and the mean operative time was 153 ± 29 minutes the mean time to start oral fluid was 29 ± 2 hours. 12 of the patient shad a laparoscopic cholecystectomy as all of them had acute biliary pancreatitis all operations were completed laparoscopically no conversion to open surgery was done.no mortality detected in our study .no intraoperative complications only one case had postoperative bleeding that respond to conservative therapy, one case of postoperative wound infection responds to antibiotic therapy. All cysts were resolved completely success rate (100%). The mean hospital stay was 4.35 ± 0.28 days. The mean follows up time was 10.5 ± 0.875 months.

Conclusions: Laparoscopic cysogastrotomy is as safe, effective procedure for management of the pancreatic pseudocyst in the hand of expert well trained laparoscopic with enough equipment.

Keywords: Anterior cystogastrostomy, Laparoscopic cystogastrostomy, Pancreatic pseudocyst

INTRODUCTION

One of the most common lumps of the pancreas is the pancreatic pseudocyst, with an estimated incidence of 70-

80%. Pancreatic pseudocyst development following an attack of acute pancreatitis, chronic pancreatitis or abdominal trauma. There are two main option for treatment pancreatic pseudocyst if it persists beyond six

weeks and not respond to conservative treatment, surgical (laparoscopic and conventional open surgery) and non-surgical treatment (endoscopic and percutaneous drainage through ultrasonography or computed tomography guide).^{3,4}

It is reported that conventional open technique had morbidity rate can reach up to 40% and a mortality rate in 5.8%. 5 due to high morbidity and mortality rate the introduction of minimal invasive surgery for pancreatic pseudocyst was developed in 1990 this include laparoscopic internal drainage of the pseudocyst, endoscopic drainage and radiological drainage techniques. 1,2,6,7

Laparoscopic internal drainage of pancreatic pseudocyst includes a variety of technique such as posterior cystogastrostomy, anterior cystogastrostomy and Rouxen-Y jejunal loop.^{8,9}

The objective of this study was to evaluate the outcome of pancreatic cystogastrostomy for pancreatic pseudocyst as regard operative and postoperative results in Sohag university Hospitals.

METHODS

This was a prospective observational single center study at the General Surgery Department Sohag University Hospitals, Egypt. The study populations were patients suffering from pancreatic pseudocyst attend to the outpatient clinic from March 2014 to March 2017. All patients were evaluated by history taking, physical examination, laboratory investigation including serum lipase and amylase and radiological evaluation by abdominal ultrasonography and contrast enhanced computed tomography of the abdomen.

Inclusion criteria

- Age more than 18 years
- More than 6 weeks after the last attack of acute pancreatitis
- More than 6 cm in size
- Symptomatic cyst.

Exclusion criteria

- Less than 6 weeks from the attack of acute pancreatitis
- True pancreatic cyst
- Small sized cyst
- Solid debris or necrotic material inside the cyst.

Surgical techniques

All operations were done under general anesthesia, insertion of Ryle tubes and Foley's catheter were done. After creation of pneumoperitoneum using a Veress needle the first periumbilical (10-12 mm) trocar was

inserted followed by insertion of two 5 mm trocars at the subxiphoid area and right subcostal region in the midclavicular line another 12-mm trocar left subcostal regions in the midclavicular line. The anterior gastric wall was opened using the harmonic scalpel then at the site of the bulge of the cyst into the posterior gastric wall, posterior gastrostomy including the anterior wall of the cyst was done, the anterior cyst wall was anastomosed to the posterior gastric wall by GIA stapler and suture, laparoscopic cholecystectomy was done in biliary cause of pancreatitis. Deflation of the abdomen Then closure of the anterior of the stomach was done. A drain was left in the abdomen, closure in layers of the port sites were done.

Post operatively the Ryle and the urinary catheter were removed as soon as possible, the patient can start oral fluid once he can tolerate fluid, drain removed when the amount of fluid less than 50 ml/24 hours.

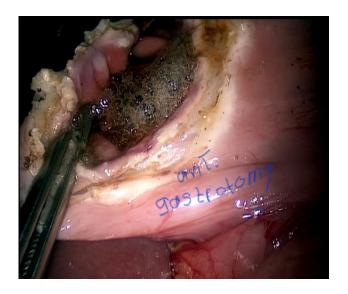


Figure 1: Anterior gastrostomy.

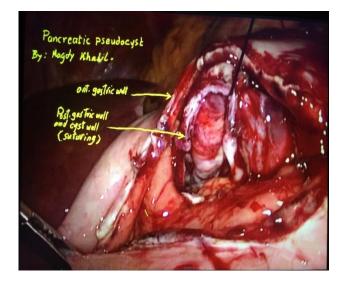


Figure 2: Laparoscopic view of stomach and open pancreatic pseudocyst.

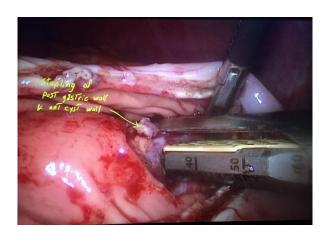


Figure 3: Stapling posterior gastric wall to the anterior cyst wall.

Primary outcome measure

Complete resolution of the cyst.

Secondary outcome measures

• Operative time, operative and postoperative complications hospital stay, wound complications.

Follow up follow up of the patient in the surgical outpatient clinic after 1,3 and 6months after operation .in each visit patients evaluated by history taking, physical examination. computed tomography of the abdomen was done 3 months post operatively to detect any recurrence

Statistical analysis

Data were summarized as mean±standard deviation (SD) for numerical variables and number (percentage) for non-parametric variables. Statistical Package for Social Sciences (SPSS Inc., version 16, Chicago, US), for statistical analysis was used.

RESULTS

Between March 2014 and March 2017, 14 patients with pancreatic pseudocyst had fulfilled our inclusion criteria and included in this study table 1 represent patient demographic.

Table 1: Patient's demographic.

Mean age (years)	45±1.8 years
Sex (male/female)	6/8
ASA	2
Etiology	
Gall stone	12
Undetermined	2
Cyst diameter (mean in centimetre)	10.69±2.13 cm
BMI (k/m2)	25.87±3.50

ASA American society of anesthesiologist, BMI body mass index.

8 patients were female and 6 patients were male. 12 patients had previous history of acute biliary pancreatitis at least 6 months before the operation.

2 patient had undetermined pancreatitis. The mean age of the patient was 45.5 ± 1.8 years. operative outcome presented in Table 2, the mean operative time was 153 ± 29 minutes the mean time to start oral fluid was 29 ± 2 hours. 12 of the patients had a laparoscopic cholecystectomy as they all had acute biliary pancreatitis all operations were completed laparoscopically no conversion to open surgery was done.

Table 2: Operative outcome.

Operative time	153±29 minutes
Intraoperative blood loss (mean in milliliter)	111 ml±30 ml
Number of blood transfusion unit	0
Operative complications	0
Conversion to open surgery	0

No mortality detected in our study no intraoperative complications only one case had postoperative bleeding in the Ryle (about 100ml) we think that it is from the anastomotic line we that respond to conservative therapy and stopped spontaneously the patient was stable and not required transfusion, one case of postoperative wound infection respond to antibiotic therapy. All cysts were resolved completely success rate (100%).the mean hospital stay was 4.35 ± 0.28 days. The mean follows up time was 10.5 ± 0.875 months.

Table 3: Represent postoperative results.

Postoperative complications	
Wound infection	1/14
Bowel injury	0
Bleeding	1/14
Mortality	0
Hospital stay (days)	4.35±0.28 days
Success rate	100%
Follow up time (months)	10.5±0.875 months

DISCUSSION

Surgical management of pancreatic pseudocyst changed dramatically in the last decade. traditionally open surgical drainage of the pancreatic pseudocyst into the stomach, duodenum or jejunum depending on the location of the cyst was the standard approach. With the advent of laparoscopy drainage of the pancreatic pseudocyst by laparoscope began. Up to 2016 more than 250 laparoscopic drainage procedures for pancreatic pseudocyst were performed worldwide with mortality rate 0% success rate 92%, overall complication rate 9%,6.7% conversion to open surgery and recurrence rate 3%. 12

The result of our study reported 0% mortality, no recurrence and 100% success rate. Which match with the above results.

Cuschieri et al, in their study on 8 patients reported 100% success rate,100% complete resolution which was like our results.¹³

Chowbey et al, reported a similar result, also Ramachandran and his colleges in 2002 in their study on 5 patients described 100% success rate and 0% recurrence rate. 14,15

In a study of 108 patients Palanivelu et al, reported success rate 98% and complete cyst resolution in 99%, 1% recurrence rate and 9% complication rate.¹⁶

The main limitation of this study that it is nonrandomized study and small number of patients. but it represents initial promising result of laparoscopic cystogastrostomy in our locality.

CONCLUSION

Laparoscopic cystogastrostomy is as safe, effective procedure for management of the pancreatic pseudocyst in the hand of expert well trained laparoscopic with enough equipment.

ACKNOWLEDGMENTS

Authors would like to thank Dr. S. P. Sharma for his valuble support during study.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

institutional ethics committee

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Cite this article as: Mohamed WBA, Abdelmageed MK, Gomaa E. Laparoscopic cysto-gastrostomy for management of pancreatic pseudocyst. Single center experience in upper Egypt. Int Surg J 2017;4:2110-3.