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Case Report

Laparoscopic Roux-en-Y cystojejunostomy with indocyanine green angiography for a recurrent large pancreatic pseudocyst: a case report

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ABSTRACT

Symptomatic pseudocyst of pancreas can present as abdominal pain or back pain, early satiety, unexplained weight loss, jaundice, steatorrhea, or a palpable mass. This case involves a 31-year-old male with a large, recurrent pseudocyst, initially managed by endoscopic drainage, then complicated by recurrence. Despite failed attempts at a repeat endoscopic cystogastrostomy, surgical intervention was successful, albeit challenging due to the patient's physique and cyst size. Roux-en-Y cystojejunostomy was performed, aided by intravenous indocyanine green (ICG) angiography to ensure anastomotic vascularity. Postoperative recovery was smooth, and the patient was asymptomatic after 4 months without residual collections. Thoughtful intervention is vital for managing such pseudocysts, with surgical drainage remaining crucial, albeit with adaptable port placement. Choice between cystogastrostomy and cystojejunostomy should consider pseudocyst location for optimal drainage. The use of indocyanine green angiography for assessing vascularity supports the success of anastomosis intra-operatively and presents an intriguing research avenue.

Keywords: Pancreatic pseudocyst, Laparoscopy, Roux-en-Y cystojejunostomy, Indocyanine green angiography, Minimal access surgery

INTRODUCTION

Pancreatic pseudocysts are a well-known complication of acute or chronic pancreatitis, with a higher incidence of pseudocysts ranging from 5% to 16% in acute pancreatitis whereas in chronic pancreatitis the numbers are higher and incidence rates of 20–40% have been published.[1] These are histopathologically defined as fluid-filled cavities from the pancreas surrounded by a wall of fibrous or inflammatory tissue without an epithelial lining. Chronic pseudocysts over 8 weeks are less likely to resolve spontaneously and, as the risk of complications increases with time, treatment of large pseudocysts (>5 cm) should not be postponed.[2]

CASE REPORT

A thirty-one-year-old male with a history of acute pancreatitis was diagnosed with pseudocyst. He underwent endoscopic drainage and was lost to follow up. However, 9 months later, the patient came again with complaints of early satiety and upper abdominal fullness. He had no complaints of abdominal pain, jaundice, fever, chills, nausea or vomiting. The patient weighed 54 kg and had a body mass index (BMI) of 17.5 kg/m^2. During the abdominal examination, a soft, compressible 10×10 cm lump was found in the epigastrium, extending to the umbilical region. Computed tomography (CT) scan revealed 8.5×11.2×10.0 cm hypodense collection in lesser sac extending from T12 to L2 vertebral level. It is displacing the stomach anteriorly. Posteriorly it is compressing the common bile duct with mild central Intrahepatic biliary radicle dilatation. The cyst did not show any ductal communication.

Serology was negative for tumor markers. Referral for endoscopic cystogastrostomy to the gastroenterology service was made, which turned out to be unsuccessful,

leaving us with only a surgical approach for management of a symptomatic pseudocyst.

Patient was posted for laparoscopic drainage procedure with initial plan for cystogastrostomy. Under general anesthesia and in a leg split position, 10 mm camera port was introduced by open technique, 5-7 cm inferior to palpable margin of pseudocyst and large pseudocyst was visualized.

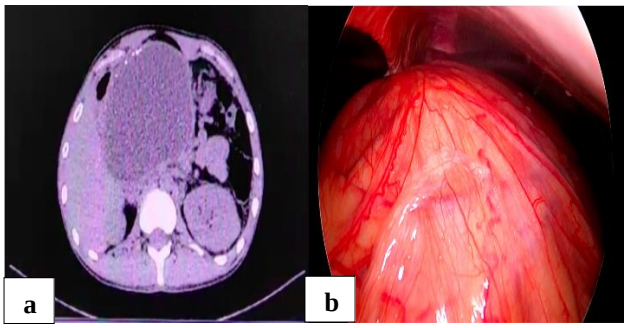

Figure 1: (a) Computed tomography showing large 420 cc pseudocyst displacing abdominal viscera, and (b) laparoscopic view of pseudocyst seen occupying almost entire abdominal cavity.

The patient's lean build and the large pseudocyst made it challenging to create sufficient working space, which led to restrictions in port placement. A 5 mm trocar was inserted in the left iliac fossa under vision. Stomach was seen displaced superiorly.

It became evident that cystogastrostomy would not offer a dependant drainage and ergonomic advantage, hence the decision to perform Roux-en Y cystojejunostomy was taken. Additional right iliac fossa port was inserted and the Jejunal loop was divided with an endoscopic linear stapler at 40 cm from duodeno-jejunal flexure. Efferent limb was mobilized to lie adjacent to the dependent portion of the cyst and enterotomy was made with ultrasonic shears.

Cyst was opened and contents were drained. 45 mm endoscopic staplers were used for side to side cysto-jejunal anastomosis.

Enterotomy was sutured with polydioxanone 3-0. Roux limb was anastomosed at 30 cm from cysto-jejunal anastomosis in a side to side fashion.

Intravenous indocyanine green angiography performed to confirm vascularity at jejuno-jejunal and cysto-jejunal anastomosis. This demonstrated satisfactory fluorescence especially at the cysto-jejunal anastomosis.

A 24 French abdominal drain was placed at the end of surgery. Total operative time was 176 minutes with blood loss of 50 ml. Post-operative course was uneventful, diet was started on postoperative day one and abdominal drain was removed subsequently. Patient was discharged on post-op day four. Cyst wall histopathology and fluid analysis were negative for malignancy.

A three-month follow-up CT scan revealed no residual collection.

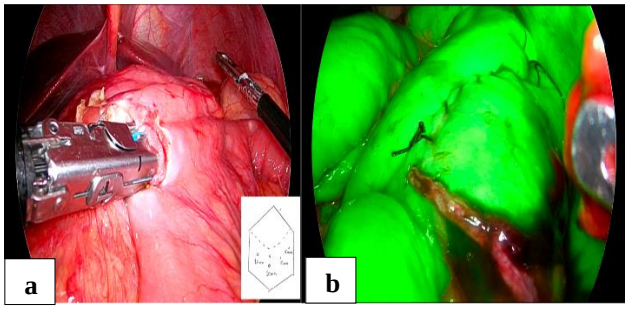

Figure 2: (a) Side to side cysto-jejunal anastomosis with linear endoscopic stapler; (inset) final port placement; and (b) perfusion at the anastomotic site was confirmed with intravenous indocyanine green angiography.

DISCUSSION

Pancreatic pseudocysts presentations range from asymptomatic lesions to multiple pseudocysts with pancreatic and bile duct obstruction. The latter may require immediate endoscopic or surgical intervention to prevent secondary complications.

Percutaneous drainage is indicated solely for infected pancreatic pseudocysts.[3] Endoscopic drainage may fail due to: no clear impression of the pseudocyst into the lumen of the stomach or gut, failed insertion of the drain, bleeding and gallbladder puncture.[4]

Despite recent developments in CT and endoscopic therapy, surgical drainage is still a principal method in the management of pancreatic pseudocysts. Surgical drainage in this case was challenging due to large pseudocyst and proportionately small abdomen of the patient. This was overcome by modifying port placement keeping in mind subsequent ergonomics in play. The decision to perform roux-en-Y cystojejunostomy was taken due to the upward displacement of the stomach. Additionally, roux-en-Y avoids the complications of afferent loop syndrome.[5] The Roux limbs are constructed at short intervals of 40-80 cm, thus preventing malabsorption in an already undernourished patient. Newell et al found no significant difference in cyst recurrence, morbidity or mortality between cystogastrostomy and cystojejunostomy but the duration of the operation and blood loss were less after cystogastrostomy.[6] During laparoscopy in limited space, a flexible approach towards port placement while following principles of ergonomics is essential to enhance the rates of successful completion without conversion to open.[7] In this way the morbidity of laparotomy was avoided. ICG angiography is well known for confirming vascularity in intestinal anastomosis.[8] Its use in understanding cysto-

jejunal anastomosis has not been documented previously. Cyst wall blood supply is a consequence of chronic inflammation and resultant vasculature is incompletely understood.[9] Satisfactory visual cue by ICG angiography supports healing of cysto-jejunal anastomosis.[10] However, further studies are needed to understand vascularity of cysto-jejunal anastomosis.

CONCLUSION

In conclusion, this case highlights the successful management of a large recurrent pancreatic pseudocyst using laparoscopic Roux-en-Y cystojejunostomy, supported by ICG angiography for vascular assessment. Despite challenges posed by the patient's physique and cyst size, strategic port placement and flexible surgical planning ensured a favorable outcome. The use of ICG angiography provides a valuable tool for confirming anastomotic vascularity, promoting healing, and minimizing complications. Further research is warranted to explore its broader application in similar surgical contexts.

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