

## CASE REPORT

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# Feasibility of Laparoscopic Distal Spleno-Pancreatectomy Following Previous Necrosectomy. A Case Report

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### ABSTRACT

**Context** In recent years, laparoscopic approach to distal pancreatectomy has been increasingly favoured following several reports showing reductions in morbidity and hospital stay compared with open surgery. Previous major abdominal surgery is a relative contraindication for most laparoscopic procedures including distal pancreatectomy.

**Case report** We present a case of a young woman in whom we attempted and accomplished safely, a laparoscopic distal pancreatectomy despite having had major pancreatic necrosectomy and discuss the feasibility of this approach.

**Conclusion** It is possible to perform complex laparoscopic pancreatic resections safely in centres with special interest and expertise.

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### INTRODUCTION

Laparoscopic pancreatic surgery has been slow to expand due to technical difficulties in accessing the retroperitoneal space, the complex anatomical relationship of the pancreas with the surrounding vessels and the serious morbidities in pancreatic surgery especially pancreatic leak. However, thanks to rapid advances in surgical techniques and instrumentation in recent years, the

laparoscopic approach to distal pancreatectomy is now gaining popularity [1, 2, 3].

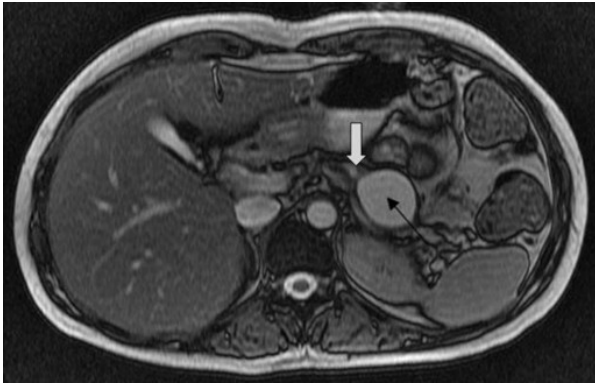
To our knowledge, laparoscopic pancreatic resection following previous abdominal surgery has not been a matter of discussion; moreover, there are no reports on laparoscopic pancreatic resection in a patient with previous pancreatic necrosectomy.

Previous major abdominal surgery is generally considered a relative contraindication for most laparoscopic procedures because of technical difficulties due to adhesions and risk of iatrogenic injury [4].

We present a case of a young woman who successfully and safely underwent laparoscopic distal pancreatectomy four years after open pancreatic necrosectomy, for an unusual symptomatic cystic dilatation of the distal pancreas and discuss the feasibility of this approach.

### CASE REPORT

A 37-year-old lady was referred to us for management of a cystic pancreatic lesion and recurrent pancreatitis. Four years ago, she presented with severe gallstones related acute pancreatitis to her local hospital where she underwent open pancreatic necrosectomy and cholecystectomy. During the subsequent years, she had several further attacks of pancreatitis necessitating hospital admissions affecting her quality of life. The pain was associated with food thus affecting her oral



**Figure 1.** Transverse section of magnetic resonance cholangiopancreatogram (MRCP) with secretin stimulation showing large cyst (black arrow) in the distal pancreas. Proximal to the large cyst is the area of stricture (white arrow) in the pancreatic duct.

intake and leading to significant weakness in addition to loss of weight. During her last admission a CT scan was performed which revealed a large cystic lesion in the body and tail of pancreas. She was referred to us and an MRCP with secretin stimulation was performed. This scan confirmed the presence of a 3.5 cm cyst in the tail of the pancreas connecting to the main pancreatic duct and lying distally to a stricture in the main pancreatic duct at the pancreatic body level (Figure 1). The clinical and radiological findings were discussed at our pancreatic multi-disciplinary meeting and the possibility of a mucinous cystic neoplasm was considered. With the suspicion of malignancy and the fact that she was symptomatic, a distal pancreatectomy was decided at the multi-disciplinary meeting and discussed with the patient. The patient was keen to avoid having a second laparotomy and it was agreed to

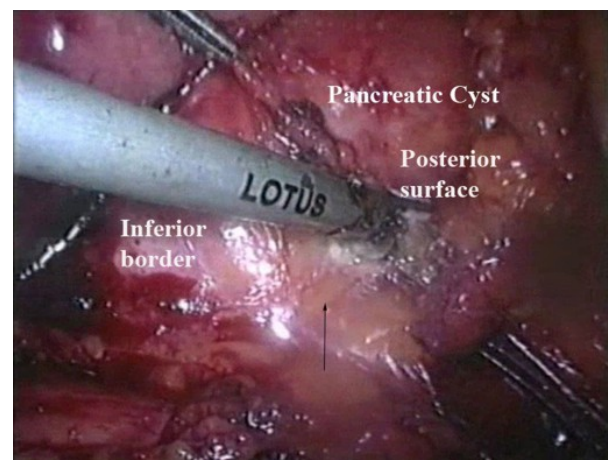


**Figure 2.** Port sites.

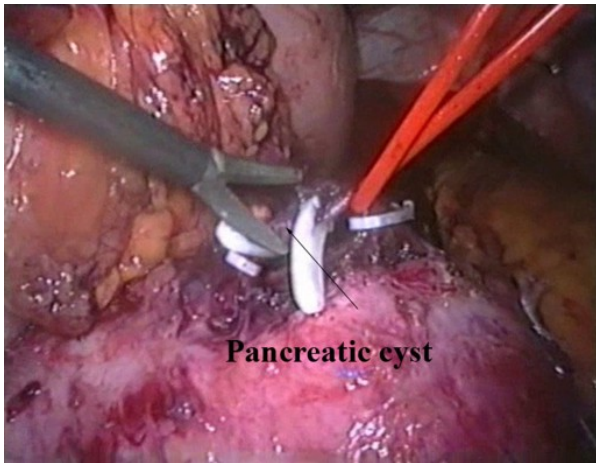
attempt a laparoscopic resection and convert to open surgery if needed.

### Technique

Procedure was performed with the patient positioned left side up and surgeon and assistant standing on the patient's right hand side. Four ports were inserted as shown (Figure 2). As expected, there were dense adhesions, areas of fat saponifications, fibrotic peripancreatic tissue (Figure 3) and atrophic pancreas at the level of the stricture. The gastrocolic ligament had been previously opened and a careful dissection of dense adhesions between posterior stomach and pancreas was performed followed by the mobilization of the lower pancreatic margin using an ultrasonic dissector (Lotus<sup>TM</sup>, Laparoscopic Operation by Torsional Ultrasound, Devon, United Kingdom). Further dissection along inferior and superior pancreatic border was performed and a sling was passed around the pancreas to lift the organ enabling further dissection. Intra-operative ultrasound was then performed to define the lesion and the level of the stricture and therefore the extent of resection needed to ensure clear margins. The dense peripancreatic adhesions and the fibrotic gland would not have allowed the preservation of the spleen therefore the splenic artery was identified and secured with two Hem-o-lock (Weck Closure Systems,



**Figure 3.** Areas of saponification and peripancreatic fibrosis (arrow) encountered during opening of lesser sac.

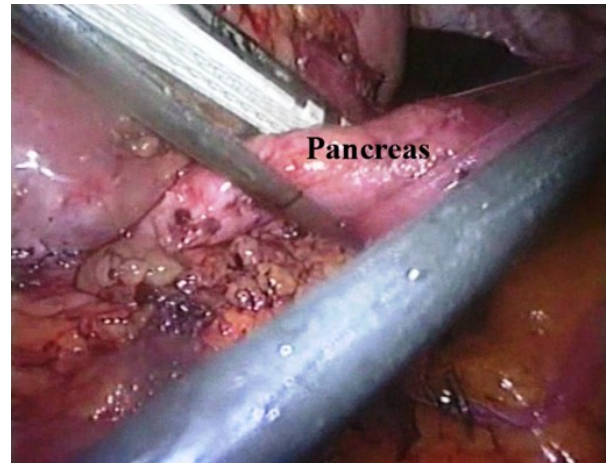


**Figure 4.** Application of Hem-o-lock (Weck Closure Systems, North Carolina, USA) clips to splenic artery (arrow). The large pancreatic cyst is clearly seen.

North Carolina, USA) clips (Figure 4). The pancreas and splenic vein were then divided using an endoscopic stapler (Echelon 60, Ethicon Endo Surgery, Cincinnati, Ohio, USA) (Figure 5). The distal pancreatectomy with splenectomy enbloc was completed after mobilizing the spleen. The pancreatic stump was then oversewn with interrupted 3/0 polydioxanon (PDS) suture and a drain was positioned near the pancreatic stump. The specimen was retrieved through the lower part of the previous midline incision in a leak proof endobag (Autosuture™, Norwalk, CT, USA).

### Histology

Interestingly, the histopathological examination showed a cystic dilatation of the pancreatic duct on the background of chronic pancreatitis associated with a proximal stricture in the duct. The cyst was lined by single layer of cytologically bland columnar cells. The wall of the cyst showed marked fibrosis with atrophy of the background pancreatic tissue and patchy chronic inflammation (Figure 6). There was no mucin production identified using special stains. The area of obstruction showed features of severe chronic pancreatitis. A total of 7 reactive lymph nodes have been harvested. The pancreatic resection margin and vascular resection margin show benign tissue.

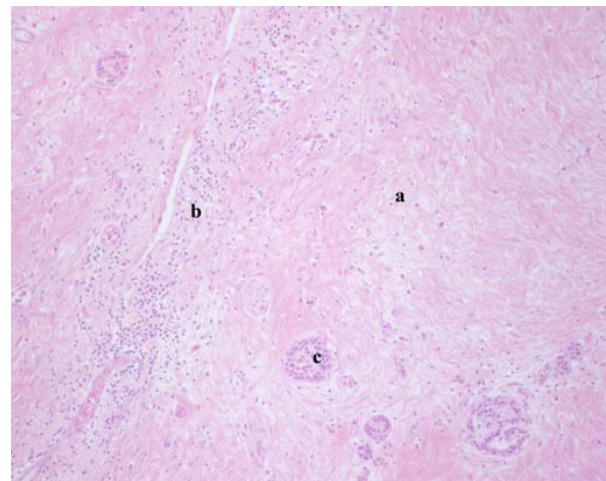


**Figure 5.** Application of stapling device to transect the pancreas. The pancreas is lifted up with a sling to allow proper deployment of endoscopic stapler.

### Post-Operative Course

Post-operatively, patient was nursed in the Surgical High Dependency Unit for 1 day and in the surgical ward for 5 days. Amylase from the drains were 39 IU/L and 60 IU/L at 2 and 5 days, respectively, therefore drains were removed and she was discharge five days post operatively.

At 6 weeks, she had made complete recovery and was back to normal activity. She was subsequently reviewed at 6 months when she reported a weight gain of 10 kilograms,



**Figure 6.** Pancreatic atrophy in cyst wall with residual islets. The wall of the cyst showed marked fibrosis (a) with patchy chronic inflammation (b) and mostly atrophy of the background pancreatic tissue with occasional residual islets (c). No mucin production was identified with special stains.

remained normoglycaemic with no recurrence of her previous symptoms and was back to her full time job.

## DISCUSSION

While laparoscopic approach rapidly became established for several routine general surgical and gynaecological procedures, it was slow to be accepted for pancreatic disorders, mainly due to the posterior position of the pancreas, the complex relationship of pancreas with surrounding vessels and the precarious pancreatic physiology with high risk of post operative complications especially pancreatic leak [5, 6]. Laparoscopic pancreatic surgery is now gaining popularity especially for distal pancreatectomies [7, 8, 9]. After the first reported series of 5 laparoscopic distal pancreatectomies by Gagner *et al.* in 1996 [10] followed by Cuschieri *et al.* in the same year [11], more than 200 cases been reported in the literature [12, 13, 14, 15, 16].

Factors such as previous major abdominal surgery can discourage surgeons from considering the laparoscopic approach. Particularly, as previous inflammation causes significant fibrosis with tissue planes difficult to dissect, special attention therefore is needed to avoid bleeding from splenic vessels and injuries to other organs.

To our knowledge, laparoscopic pancreatic resection following previous open pancreatic necrosectomy has not been reported. This case confirms that in expert and specialized hands this surgery is feasible and safe even with such previous surgical history.

Another interesting point is that patients with recurrent attacks of pancreatitis should be investigated thoroughly and the cystic abnormality in the pancreas in our patient was found on a CT scan following four years of pain.

Despite considerable improvement in our understanding of the pathology and natural history of cystic lesions of pancreas and the significant advances in imaging techniques in the recent years, in some cases it remains a challenge to characterise these lesions radiologically. In this case, while initially an

IPMN was rightly suspected as the cause of her attacks of pancreatitis, it was subsequently found that this lesion is a dilatation caused by ductal obstruction as a result of severe pancreatitis. Development of cystic dilatation of this size is uncommon but should be considered following severe attack of necrotizing pancreatitis. The other possibilities to be entertained in the differential diagnosis would be a mucinous cystic adenoma. Differentiation between these conditions can be a diagnostic dilemma and influence the choice of management.

We believe that in our specific case, regardless of the nature of the lesion, surgical removal was the most appropriate course of action. In retrospect, it can be argued that this condition could have been dealt with by a cystojejunostomy. However, this would not have been a reasonable option to consider with the perioperative suspicion of IPMN or mucinous cystic adenoma. All the same, the distal pancreas was atrophic and no significantly functional parenchyma would have been conserved by leaving it behind. The fact that the patient did not develop diabetes and gained weight post operatively bears testimony.

In conclusion, this case demonstrates that in safe hands and in centers with specialist interest in laparoscopic hepatopancreatobiliary surgery, laparoscopic distal pancreatectomy even in complex surgical cases is feasible and can be performed safely with significant benefit to the patient, hospital, and society. Patients with recurrent episodes of acute pancreatitis should be investigated thoroughly.

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Received May 12<sup>th</sup>, 2008 - Accepted August 1<sup>st</sup>, 2008

**Keywords** Adhesions; Laparoscopy; Necrosis; Pancreatectomy

**Conflict of interest** The authors have no potential conflicts of interest

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Document URL: <http://www.joplink.net/prev/200809/11.html>

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