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Pancreatico-enteric fistula post pancreatic duct ligation for delayed haemorrhage complicating pancreaticoduodenectomy



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ABSTRACT

INTRODUCTION: Pancreatic fistula remains the main cause for postoperative morbidity following pancreaticoduodenectomy. The coincidence of sentinel bleed prior to post pancreatectomy haemorrhage (PPH) and pancreatic fistula is associated with very high mortality.

PRESENTATION OF CASE: We report a case of pancreaticoduodenectomy complicated by postoperative leak and hematemesis. Severe delayed haemorrhage from the pancreatico-jejunosomy necessitated re-laparotomy and complete disconnection of the pancreatic anastomosis. Hemodynamic instability precluded a pancreatectomy or creation of a new anastomosis. A follow up MRI done 3 weeks after the patient's discharge demonstrated a fistulous tract causing a communication between both the pancreatic and biliary systems and the enteric loop.

DISCUSSION: Spontaneous development a pancreatico-enteric fistula despite ligation of the pancreatic duct and complete disconnection of the pancreatic anastomosis has never been reported in literature to date.

CONCLUSION: Pancreatic duct occlusion may be considered over a completion pancreatectomy or revisional pancreatic anastomosis in hemodynamically unstable and challenging cases.

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1. Introduction

Postoperative pancreatic fistula (POPF) is the most common complication occurring after pancreaticoduodenectomy [1]. Delayed post-pancreatectomy haemorrhage in association with pancreatic fistula is a grave complication associated with high morbidity and mortality [2]. Management of such cases are exceedingly challenging owing to lack of definite guidelines.

2. Case report

We present a 63 year old diabetic, hypertensive Middle-Eastern male diagnosed with moderately differentiated adenocarcinoma of second part of duodenum. The patient underwent a classical whipple's procedure with a Roux-en-Y reconstruction with single roux limb to both pancreas and bile duct [Biliopancreatic limb] and other limb to stomach [enteric limb] (Fig. 1). A duct to mucosa pancreatic anastomosis was fashioned.

On post-op day two and four, he developed hematemesis manifested by altered clots in the nasogastric tube. On both instances, in the absence of hemodynamic instability or drop in hemoglobin, the patient was treated conservatively. On post-op day three, altered blood and bile stained output from the abdominal drains with amylase and lipase levels of over 3300 and 5250 units/ml respectively from the drains confirmed a leak. On post-op day seven the patient experienced a severe attack of fresh hematemesis and malena. An emergency esophagogastroduodenoscopy showed fresh clots throughout the stomach up to the site of the gastrojejunostomy and within the proximal part of the alimentary loop, with clots preventing any further passage of the scope.

Emergency laparotomy revealed evident leakage from the pancreatic anastomosis with unhealthy gangrenous patches on the jejunal side of pancreatic anastomosis. Unveiling the anterior layers of both the gastrojejunostomy and jejuno-jejunosomy, revealed no fresh bleeding. Active bleeding was identified on unveiling the anterior layer of the pancreatic anastomosis at which point the anastomosis was completely disconnected. The gangrenous distal segment of the roux loop was excised and the remaining stump of the biliopancreatic limb closed in two layers. The pancreatic duct was then ligated and the remainder of the pancreas left in situ. A biliary drain (8 french silicone feeding tube) was inserted through

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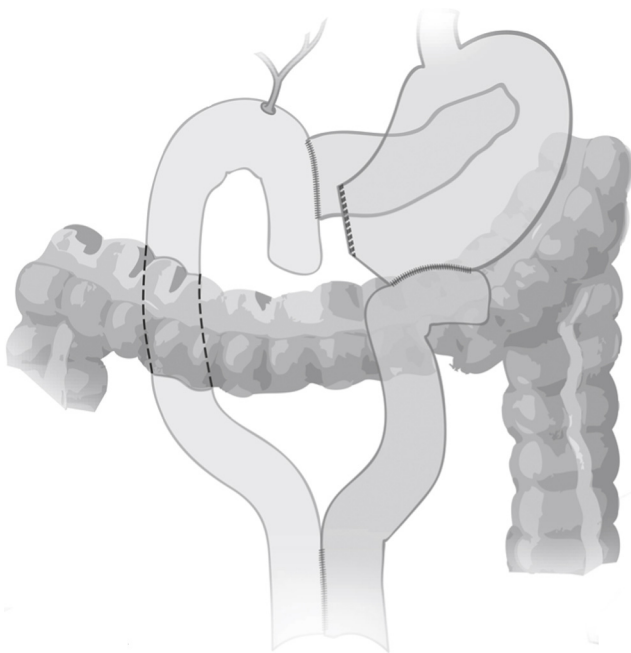


Fig. 1. Representation of reconstruction in primary procedure.

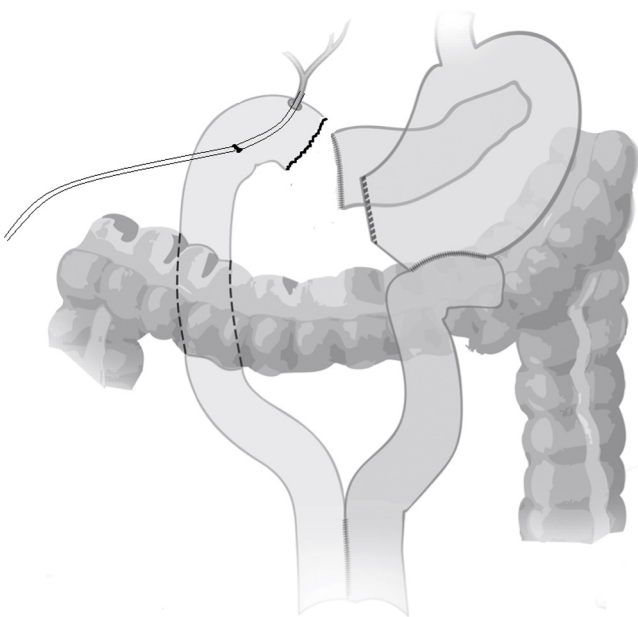


Fig. 2. Representation of reconstruction in revisional procedure.

the roux loop into the hepaticojejunostomy and brought out via the skin (Fig. 2).

Post 2nd laparotomy, high bilirubin and amylase in the pancreatic and subhepatic drains prompted cholangiography via the biliary stent that showed evidence of biliary leak from one side of the hepaticojejunostomy. Fluid analysis from the biliary drain had amylase levels of over 3000 units/ml. The serum amylase was measured at 72 units/ml. The patient remained hemodynamically stable with no signs of peritonism and the leak was managed conservatively with broad spectrum antibiotics, peripheral parenteral nutrition and octreotide administration. The patient's general condition improved and the biliary stent was removed. Marked improvement in his endocrine and exocrine function dismissed thoughts of a revisional pancreatic anastomosis. He was free from steatorrhea and was discharged home on normal diet after a total

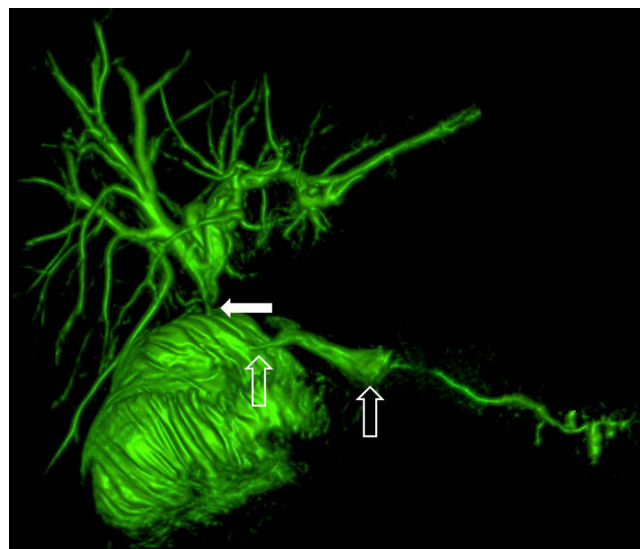


Fig. 3. Volume-rendered magnetic resonance cholangiopancreatography (MRCP) shows the surgically-created choledochojejunostomy (solid arrow) and the spontaneously-created fistulous tract between the pancreatic duct and the jejunum after pancreatic duct ligation (hollow arrows).

of 43 days in the hospital. A follow up MRI done 3 weeks after the patient's discharge from the hospital clearly demonstrated the fistulous tract causing a communication between both the pancreatic and biliary systems and the roux loop (Fig. 3).

3. Discussion

A less frequent but devastating complication occurring after pancreatic resection is postpancreatectomy haemorrhage (PPH) [1]. The presented case developed haematemesis on post op day 2 that resolved without intervention or need for transfusion, classifying it as a "sentinel bleed" [2]. Later he rebled on post op day 7, with a drop in hemoglobin over 6 g/dl and associated hemodynamic instability terming it as "severe delayed PPH" [2]. The coincidence of sentinel bleed prior to PPH and pancreatic fistula is associated with very high mortality rates of over 50% [1]. Sudden severe intraluminal bleeding with hemodynamic instability warrant a surgical reexploration over interventional angiography as was done in our patient [1].

Bleeding from the pancreatico-jejunostomy is a particularly challenging problem usually managed by completion pancreatectomy or refashioning of the anastomosis. However the poor condition and need for inotropic support in the presented case limited our intervention to pancreatic duct occlusion [damage control approach]. Pancreatic duct occlusion has been described as an alternative to pancreatico-jejunostomy in elective pancreatoduodenectomies in the past with variable rates of postoperative leaks, fistulae and morbidities [3].

Post whipple morbidities though frequent are mostly managed by less invasive modalities such as image guided aspirations. However complex life threatening complications may mandate a salvage procedure such as a completion pancreatectomy or external tube pancreatostomy. Salvage completion pancreatectomies are associated with high mortality rates [4]. Patients who undergo an external tube pancreatostomy in the acute setting may have a favorable mortality risk [5]. However, this might mandate a revision pancreatico-jejunostomy at a later setting.

Post damage control surgery, the presented patient remained hemodynamically stable with no signs of peritonism inspite of the leak. The stable post-operative course of the patient sidelined any

thoughts of a controlled external pancreatic ductal drainage, completion pancreatectomy or revision pancreatico-jejunostomy. On discharge the patient had normal exocrine and endocrine function. High amylase levels in the biliary drain coinciding with radiological findings confirmed our speculation of a spontaneous pancreatico-enteric fistula (Fig. 3). We can only hypothesize that the pancreatic leak following second laparotomy may have followed the pathway of least resistance to the outside, which in this case was the biliary-enteric anastomosis with the biliary drain passing across it.

4. Conclusion

Management of severe life threatening delayed PPH with concomitant fistula is extremely challenging and calls for an individualised approach. Pancreatic duct occlusion may be considered over a completion pancreatectomy or revisional pancreatic anastomosis in hemodynamically unstable patients. Spontaneous development of a pancreatico-enteric fistula despite ligation of the pancreatic duct has never been reported to date.

Conflict of interest

None.

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Ethical approval

Case Report # 15211/15, Clearance from IRB, Medical Research Center, Hamad Medical Corporation.

Consent

Yes.

Author contribution

Adarsh Vijay—Manuscript preparation, Editing, Islam Noaman—manuscript preparation, Ahmed Mahfouz—Radiology imaging and reporting, Mahwish Khawar—manuscript editing, Hatem Khalaf—manuscript editing and second surgeon, Ahmed Elaffandi—manuscript editing, primary surgeon.

Guarantor

Dr. Adarsh Vijay.

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