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Delayed graft duodenal perforation due to impacted food five years after simultaneous pancreas-kidney transplantation: A case report

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ABSTRACT

INTRODUCTION: Pancreas transplantation is the best treatment option in selected patients with type 1 diabetes mellitus. Here we report a patient with a nonmarginal duodenal perforation five years after a simultaneous pancreas-living donor kidney transplantation (SPLKT).
PRESENTATION OF CASE: A 31-year old male who underwent SPLKT five years previously presented with severe abdominal pain. He had a marginal duodenal perforation four years later, treated by primary closure and drainage. Biopsy of the pancreas and duodenum graft at that time showed chronic rejection in the pancreas and acute inflammation with an ulcer in the duodenum. At presentation, computerized tomography scan showed mesenteric pneumatosis with enteric leak and ileal dilatation proximal to the anastomotic site. We performed emergent laparotomy and found a 1.0 cm perforation at the nonmarginal, posterior wall of the duodenum. Undigested fiber-rich food was extracted from the site and an omental patch placed over the perforation. An ileostomy was created proximal to the omega loop for decompression and a drain placed nearby. The postoperative course was unremarkable.
DISCUSSION: There are only eight previous cases of graft duodenal perforation in the literature. Fiber-rich food residue passing through the anastomosis with impaction may have led to this perforation.
CONCLUSION: When a patient is stable, even in the presence of delayed duodenal graft perforation, graft excision may not be necessary. Intraoperative exploration should include Doppler ultrasound examination of the vasculature to rule out thrombosis as a contributor to ischemia. Tissue biopsy should be performed to diagnose rejection.

1. Introduction

Pancreas transplantation is the optimal treatment for selected patients with Type 1 diabetes mellitus. According to the International Pancreas Transplant Registry (IPTR), of more than 35,000 pancreas transplantations reported by the end of 2010, approximately 75% were simultaneous pancreas-kidney transplantations, 18% were pancreas after kidney transplantation, and 7% were pancreas transplantation alone [1]. With advances in surgical technique, immunosuppression, management of graft rejection, and other related complications, the reported 10-year and 20-year patient survival rates were 63% and 36%, respectively [2]. The surgical complication rate is reported as 22% including graft pancreatitis, infection/abscess, necrosis, graft-vessel thrombosis, anastomotic leak, and intraabdominal hemorrhage [3]. Although most complications occur within 60 days of transplantation, delayed graft duodenal perforation is very rare.

This work has been reported in accordance with the SCARE criteria [4].

2. Presentation of case

A 31-year old male five years status-post simultaneous pancreas-living donor kidney transplantation (SPLKT) presented with severe abdominal pain. He developed type 1 diabetes mellitus at the age of 8 years and was treated with peritoneal dialysis since age 25. His past surgical history includes SPLKT initially with bladder drainage, then converted to enteric drainage one year later due to recurrent urinary tract infections. At that time, a side-to-side duodeno-ileostomy was performed and an omega loop created to minimize reflux. After SPLKT he was free from peritoneal dialysis and insulin therapy, which preopertaively included approximately

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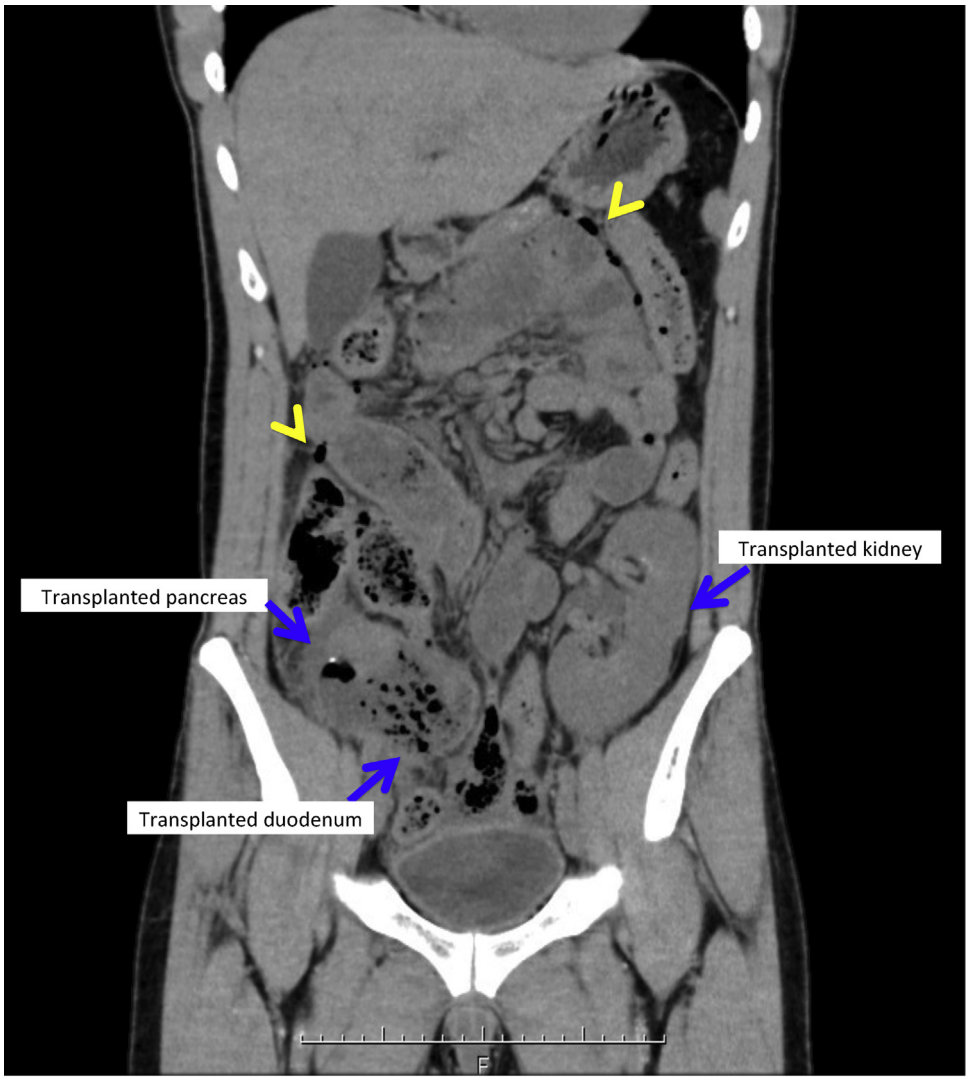

Fig. 1. Computed tomography scan of the abdomen shows free air (arrow head) and the graft duodenum impacted with food.

30 U of long acting insulin daily. He had a marginal duodenal perforation four years later, treated by primary closure and drainage. Biopsy of the graft showed chronic rejection in the pancreas and acute inflammation with ulcer in the duodenum. The maintenance trough level of Tacrolimus was increased from 5 ng/ml to 10 ng/ml postoperatively and remained stable. Current medications include tacrolimus 1.5 mg, mycophnolic acid 360 mg, esomeprazol, clopidgrel, carvedilol, simbastatin/ezetimibe, and allopurinol.

At presentation, physical examination of the abdomen showed generalized tenderness with guarding and rebound. Laboratory studies showed elevated lipase and creatinine levels at 377 U/L and 1.16 mg/dl, respectively. The trough level of tacrolimus was within the optimal range at 6.5 ng/ml. Cytomegalovirus antigen was not detected. A computed tomography scan showed mesenteric pneumatosis intestinalis with enteric leak and ileal dilatation proximal to the anastomotic site including the omega loop [Fig. 1]. Given the findings, we proceeded with exploration. Operative findings included a 1.0 cm perforation in the posterior wall of the graft duodenum [Figs. 2 and 3]. There were a few intraabdominal adhesions. The distance between the enteric anastomosis to the ileocecal valve was approximately 40 cm. Undigested fiber-rich food was extracted from the site and an omental patch placed over the perforation. An ileostomy was created proximal to the omega loop for decompression and a drain placed nearby. The postoperative course was unremarkable. Stoma closure was performed four months later and he has been well using the same immunosuppressant regimen.

3. Discussion

Most pancreas transplantation procedures are performed with systemic venous delivery of insulin and either bladder (systemic-bladder) or enteric (systemic-enteric) drainage of the exocrine secretions. The primary surgeon chose systemic venous-bladder drainage initially that allowed measurement of urinary amylase as a marker for graft rejection. The chronic loss of pancreatic secretions can result in dehydration, electrolyte abnormalities, local bladder irritation and allograft pancreatitis [5]. The need for conversion to enteric drainage has been reported to be 20%–30% as for this patient [6]. At the second operation, a side-to-side duodeno- ileostomy was performed at 40 cm from ileocecal valve, with an omega loop created to minimize reflux. A Roux-en-Y configuration was not chosen due to the anatomical difficulties associated.

The optimal configuration of anastomosis is unknown. In International Pancreas Transplant Registry analyses, no differences were reported in short-term outcomes according to surgical technique (bladder versus enteric exocrine drainage, Roux limb versus no Roux limb, systemic versus portal venous delivery of insulin) [7]. The optimal configuration varies depending on the surgeons' expe-