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The successful salvage of a thrombosed pancreatic graft at the early postoperative period of a simultaneous pancreas and kidney transplantation

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ABSTRACT

INTRODUCTION: Simultaneous kidney and pancreas transplant is the preferred treatment option for end-stage renal disease due to type 1 diabetic nephropathy. Vascular complications are detrimental to graft survival and can lead to graft loss in the early postoperative phase of transplantation. Generally, duplex Doppler ultrasound is used for vascular patency monitoring and pancreatectomy followed by re-transplantation is required in the majority of cases. Recently, pancreatic graft salvage with non-operative management, including medical anticoagulation and endovascular thrombectomy, in the early postoperative period has been described with success.

PRESENTATION OF CASE: We report a case of early detection of pancreas venous graft thrombosis via clinical suspicion and radiological methods, and early intervention with endovascular thrombolysis. As a result, the pancreatic graft was successfully salvaged.

DISCUSSION: A limited number of studies had showed successful graft salvage in only 30–45% of thrombosed pancreatic graft with surgical thrombectomy. Our patient also had bleeding from the vascular access site and ultimately required blood transfusion, however she recovered well after procedure.

CONCLUSION: Given the complexity and significance of PVGT, urgent and prompt treatment is necessary. Interpreting outcomes from our case and other small studies, it appears that endovascular pharmacomechanical thrombectomy can be a vital tool to salvage graft organs in those receiving SPK.

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Introduction

Transplant options for patients with end stage renal disease (ESRD) due to type 1 diabetes mellitus (T1DM) include deceased donor kidney (DDK), living donor kidney (LDK) and simultaneous pancreas and kidney transplantation (SPK). Among all the options, SPK is an established treatment for T1DM due to its associated high graft survival rate and high patient overall survival rate compared

Abbreviations: ATG, anti-thymocyte globulin; CMV, cyto megalovirus; DVT, deep vein thrombosis; SMV, superior mesenteric vein; SMA, superior mesenteric artery; T1DM, type 1 diabetes mellitus; DDK, deceased donor kidney; LDK, living donor kidney transplantation; GFR, glomerular filtration rate; ESRD, end stage renal disease; SPK, simultaneous pancreas and kidney transplantation; PVGT, pancreas venous graft thrombosis; MRI, magnetic resonance imaging.

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to DDK and LDK [1]. Specifically, the current 1 year graft survival rate for SPK is 85% [2]. In addition, SPK improves patients' quality of life via better glycemic control without requiring insulin, which is especially important in patients with hypoglycemic unawareness and hyperlabile diabetes. More recently successful SPK procedure have been reported for even morbid obese patients and living donors using minimal invasive technique [3,4]. The main advantage of SPK is optimal glycemic control therefore, the reduction and reversal of long-term micro and macrovascular complications of diabetes, including diabetic retinopathy, nephropathy and cardiovascular diseases.

Although SPK is the preferred treatment for patients with T1DM, it is a complex procedure and is associated with high morbidity and mortality rate due to early and late complications [5,6]. Among many contributing factors, including immunosuppression, post-operative management and surgical techniques, technical failure is responsible for the majority of pancreatic graft losses in the first 6 months after transplantation [5]. Technical failure in pancreatic transplantation is described as graft loss due to vascular thrombo-

sis, pancreatitis, intra-abdominal infections, anastomotic leaks or bleeding [7]. Furthermore, multiple studies have shown that vascular thrombosis is the major cause of pancreatic graft failure and is responsible for more than half of all losses within the first 3 months after transplant [8,9].

Pancreas venous graft thrombosis (PVGT) is very difficult to detect clinically due to the lack of clinical signs on physical exams and highly fluctuated serum glucose levels that could be affected by medications, electrolyte supplementation and fluid resuscitation. In addition, certain imaging modalities require nephrotoxic agents and are time consuming in the case of an urgent salvageable thrombotic event [10]. Therefore, many centers use duplex Doppler ultrasound to routinely monitor vascular patency of the pancreatic graft. Once vascular thrombosis is detected, surgical re-exploration and pancreatectomy followed by re-transplant is usually required. More recently, there has been an increasing amount of reports on the successful salvage of pancreatic grafts with medical anticoagulation or endovascular thrombectomy in the early post-operative period [11,13].

Here, we describe a case involving a 29-year-old female who underwent SPK transplantation and developed PVGT during the early postoperative period. Her venous thrombosis was successfully diagnosed and salvaged using endovascular intervention. This case report has been reported in line with SCARE criteria [12].

Case report

The patient was a 29-year-old woman with a 16-year history of T1DM who developed ESRD and had been dependent on peritoneal dialysis since 2012. Her T1DM was complicated by hyper-labile glucose levels and she was frequently unaware of hypoglycemic

episodes. Her comorbidities also included diabetic retinopathy, controlled hypothyroidism, hypertension and hyperlipidemia. She was placed on the UNOS list for an SPK transplant in 2013 after completing all the appropriate evaluations. Additionally, a dobutamine stress echocardiogram and cardiopulmonary exercise stress test were performed 6 months before the transplant and both tests demonstrated good cardiac reserve.

The patient underwent a deceased-donor SPK on January 16th 2016. The pancreas was implanted intra-peritoneally in the right iliac fossa. Pancreatic arterialization was achieved via anastomosis of the donor iliac artery Y graft to the recipient's right external iliac artery. Pancreatic venous drainage was achieved with primary anastomosis of the donor's portal vein to the recipient's right external iliac vein, with no venous extension graft. Exocrine drainage was established to the bladder. The kidney was implanted intra-abdominally in the left iliac fossa. Its arterial and venous drainage were achieved via vascular anastomoses to the left external iliac artery and vein respectively. The operation was uneventful.

Intra-operatiely the induction regime consisted 500 mg of methylprednisolone intravenously prior to organ reperfusion and 1.5 mg/kg anti-thymocyte globulin (ATG) intravenously via central line after reperfusion. Total thymoglobulin administration was 6 mg/kg. Maintenance immunosuppressive therapy included prednisolone, tacrolimus and mycophenolate mofetil.

There was immediate function of both transplanted organs. The kidney started making urine right after reperfusion, and the patient remained euglycemic throughout her hospital course. She did not require any exogenous insulin after the transplant. Postoperative capillary blood glucose levels remained stable as shown in Fig. 1. Heparin was given at a dosage of 5000 units subcutaneously 3 times daily, as a prophylaxis for venous thromboembolism. In our center,

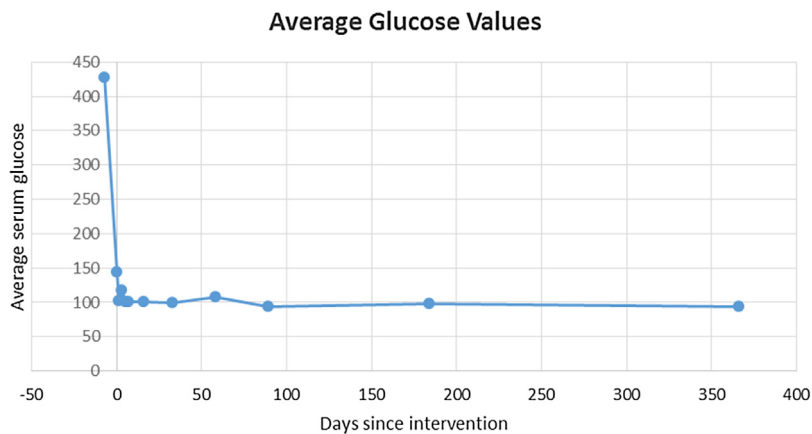


Fig. 1. Serum Glucose level after SPK transplantation.

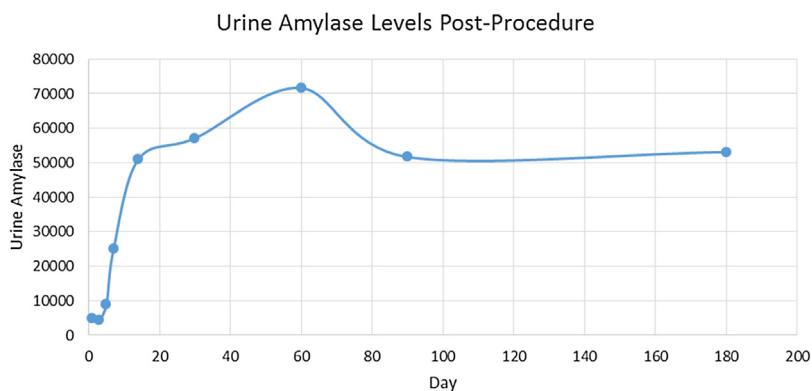


Fig. 2. Urine Amylase Levels Post SPK transplantation.

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