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Arterialization of portal conduit in pancreas transplantation

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Sir:

Modern immunosuppression with quadruple therapy comprising cyclosporine or tacrolimus, antilymphocytic antibody, mycophenolate mofetil, and steroids, coupled with surgical technique refinements, has resulted in a 10-year pancreatic graft survival of 67.2% [4]. Despite this success, the number of pancreas transplants is still low, in the neighborhood of 1218 as of the September 8, 1999 UNOS registry, whereas as many as 4450 livers have been transplanted [1]. This paucity of pancreatic grafts makes it imperative to salvage and transplant all available organs. In most cases, the whole pancreaticoduodenal allograft portal vein can be reconstructed with donor common iliac vein. A new alternative procedure to venous grafting of the portal vein using the only available donor iliac artery is described herein. Due to this procedure, a discarding of the organ was avoided.

The technique of en bloc removal of the pancreas and liver from a multiorgan donor was used. The organs were subsequently separated on the back table. The liver, as usual, received all the vascular complements including the whole portal vein and the hepatic artery on a Carrel patch. The pancreas was left with a segment of splenic artery and the stump of the superior mesenteric artery (SMA) carrying the inferior pancreaticoduodenal artery. The portal vein was transected at the junction with the splenic vein. Donor iliac vessels were also harvested.

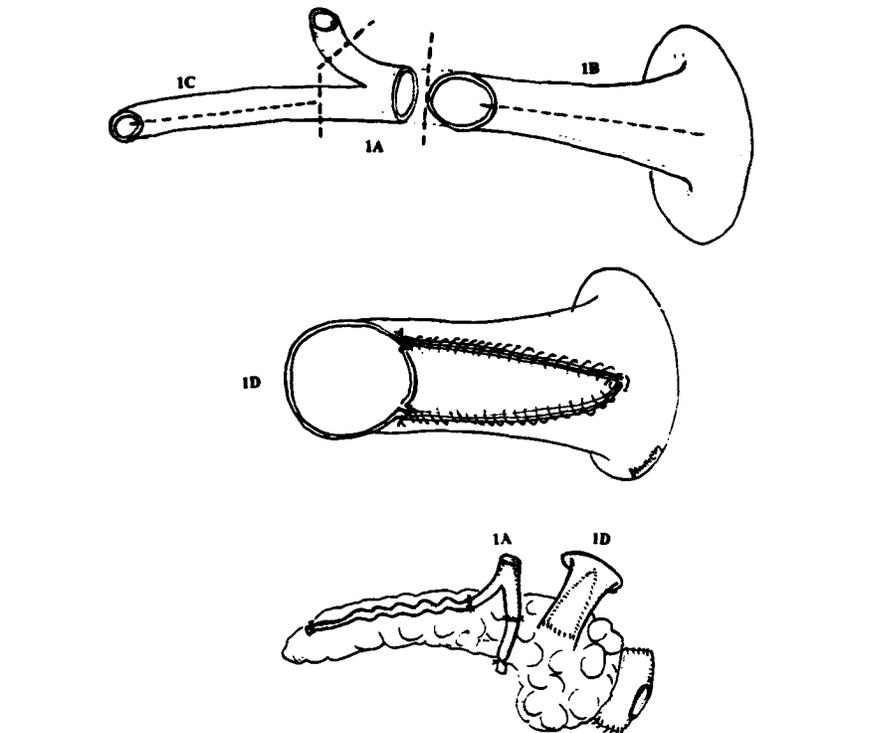


Fig. 1 The donor iliac arteries were cut into three pieces: the Y graft (1A), the proximal common iliac artery (1B), and the distal external iliac artery (1C). The two latter were split longitudinally as shown. 1A was used to bridge the splenic and mesenteric arteries. 1C was used to patch 1B leading to the newly created large 1D conduit which was then anastomosed to the portal vein cuff. The ex vivo reconstructed pancreaticoduodenal graft is shown at the bottom

When the imported pancreas and kidney were offered to a 37-year-old woman with a 21-year history of insulin-dependent diabetes, it was discovered that the organ package did not include the donor iliac vein. The small bowel mesentery was also cut short at the processus uncinatus level. The donor iliac arteries available encompassed a patch of aorta and a long external iliac artery (Fig. 1). A 2.5-cm piece of the Y graft (Fig. 1, 1A) was cut out to bridge the stumps of the SMA and the splenic artery. The proximal remaining 4 cm of the common iliac artery was then opened longitudinally to the aortic rim (1B), and the triangular defect was patched with the splitted external iliac artery segment (1C). This was carried out with continuous fine monofilament sutures. This converted the small common iliac artery

into a conduit of 2.5 cm in diameter (1D). This was then anastomosed end-to-end to the intrapancreatic portal vein cuff using continuous sutures of 6-0 polypropylene. University of Wisconsin preservative solution stained with indigo carmine was used to flush the reconstructed portal vein and pancreatic arteries, and leakages were identified and repaired.

After the distal SMA branches had been suture-ligated, the pancreas transplant thus reconstructed was vascularized by joining the venous outflow aortic patch to the fully mobilized iliac vein, and the arterial donor Y graft was anastomosed to a 6-mm punch-out arteriotomy of the common iliac artery (Hancock Aortic Punch, Medtronic, Minneapolis, Minn.). The duodenum drained into the bladder. A simultaneous left-

sided kidney transplant was performed. The postoperative course was uneventful. The patient at 41 months follow-up remains insulin-independent and has a serum creatinine of 210 mmol/l.

Since the liver is a life-saving organ and, hence, received all the vascular complements, the pancreas surgeon is constantly faced with the prospect of reconstructing the pancreatic vascular blood supply using the available donor vessels harvested. Multiple strategies have been designed to reconstruct the proximal splenic artery with the distal splenic artery [2] or the distal SMA branches [3]. This is the first record of a reconstruction of the portal venous outflow tract by donor arterial

component. The technique is straightforward and can be applied to the donor aorta, which is of the same diameter as the portal vein, or any other arteries available. It further reinforces the necessity to procure as many arteries and veins as possible at the time of multiorgan harvesting for future use. This simple technique can be added to the pancreatic surgeon's armamentarium.

References

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