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Bipolar Sealing Device Use in Pancreas Graft Preparation: A Novel Tieless Backtable Surgery Technique

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Pancreas backtable preparation is of crucial importance for the success of transplantation. It is a very time-consuming procedure requiring many suture ligations and is not infrequently associated with significant bleeding necessitating blood transfusion.[1] Much of the progress in pancreas transplantation in the past 20 years has been achieved through improved surgical technical strategies. Further optimization in technical approaches should continue to improve outcomes. The use of bipolar sealing devices has never been reported in backtable pancreas operations. We describe here for the first time the utilization of a bipolar electrosurgical device (BED) during the pancreas graft backtable procedure. Bipolar electrosurgical devices were introduced into clinical practice about 10 years ago and have wide hepatobiliary applications, including liver transplantation and pancreaticoduodenectomy.[2,3] They have been shown to seal arteries up to 7 mm and veins up to 12 mm with precision.[4] The advantages of BED are: (1) better sealing of vessels and less bleeding; (2) sealing of rich lymphatic system in graft and during dissection of iliac vessels in the graft bed, thereby decreasing lymphocele rates[5]; (3) single surgeon preparation not requiring an assistant; (4) possible reduced operative time; and (5) potential cost-effectiveness (shorter operating room cases, reduced personnel requirements, and fewer blood transfusions).[4] Bipolar electrosurgical devices are already available in virtually all transplant centers and do not require specialized training to operate. The same device can be used for the backtable procedure and recipient operation. Regarding cost-effectiveness it is worth mentioning that although the price of the disposable BED is roughly US $500, a single unit of PRBCs ranges from US $300 to US $400 and 1 hour in the operating room costs approximately US $2200.[3]

We now describe a new technique of pancreas bench preparation for the first time using a BED. This study was exempt from approval of the institution's ethics board. Stapling of the mesentery and suture ligation of the bile duct stump and gastroduodenal artery were performed at the donor hospital. The procedure is depicted in Figure 1 and the accompanying video (**Figure 1, SDC,** http://links.lww.com/TXD/A150). We used LigaSure Impact (Covidien) with the power supply level fixed at 2. The device was used both for limited dissection and for sealing vessels. All edges (ligaments), the splenic hilum, and retroperitoneum were sealed continuously around the pancreas (without skip areas). The mesentery root (previously stapled) was sealed with the bipolar device. Vascular reconstruction with donor iliac artery Y graft was done in standard fashion with 6-0 prolene. We performed a leak check with portal vein clamping by a Satinsky clamp and infusion of University of Wisconsin solution by gravity through the Y graft arterial inflow. Any leak was sealed with the device. We have performed 6 pancreas backtable procedures with this technique each taking between 30 and 45 minutes. Minimal intraoperative bleeding was observed and no patient required blood transfusion. We observed no pancreatic fistula or wound infection, and no patient was brought back to the operating room.

We describe here for the first time the use of a bipolar sealing device in backtable surgery for pancreas transplantation. The novel technique is safe, rapid, and does not require specialized skills. Bipolar sealing in backtable pancreas preparation may improve outcomes (less bleeding), save time, and

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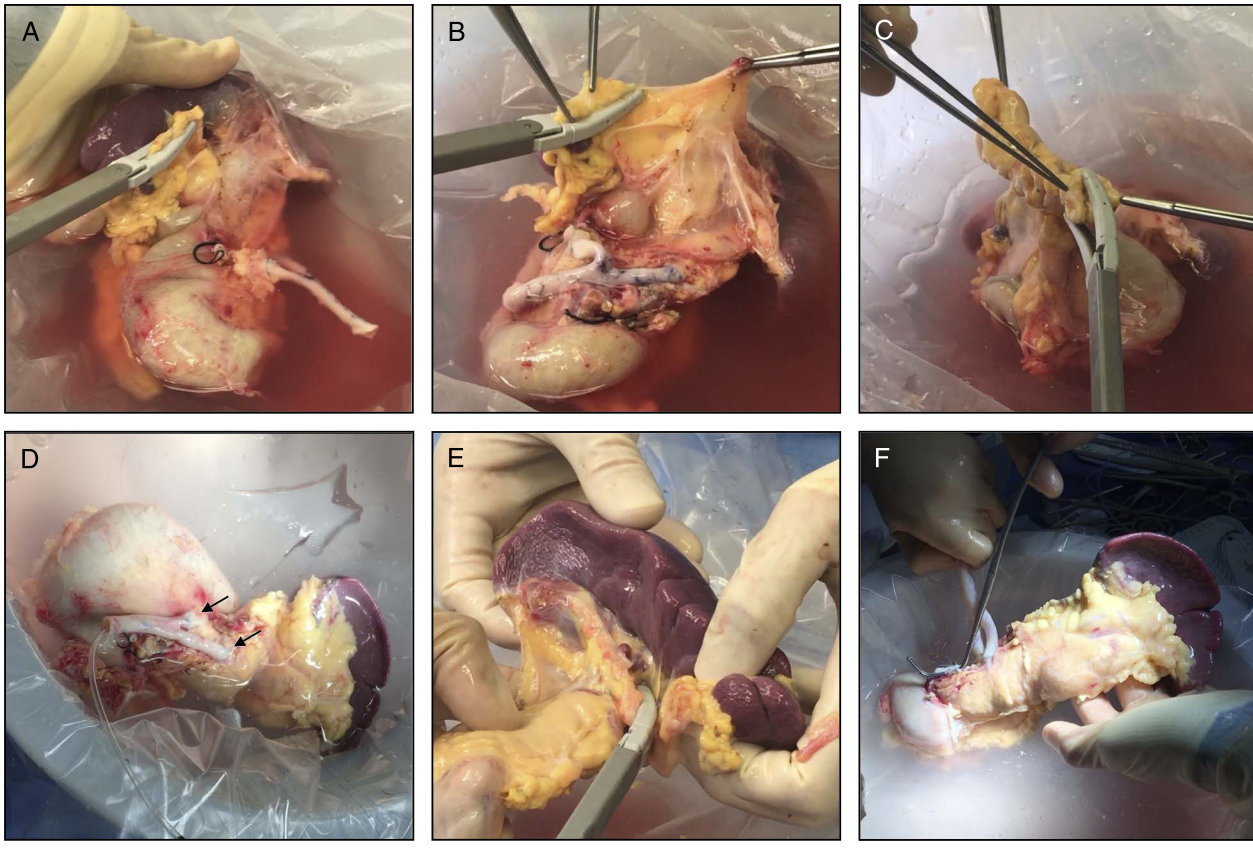

FIGURE 1. Backtable preparation of pancreas allograft with bipolar sealing device. A, B, Sealing all pancreatic borders where pancreatic ligaments were divided. C, Sealing intestinal mesentery below duodenum, previously stapled during procurement. D, Standard donor iliac Y graft, with external iliac artery to superior mesenteric artery (left arrow) and internal iliac artery to splenic artery (right arrow). E, Sealing and partial division of splenic hilum with BED (completion of splenectomy was done after reperfusion). F, University of Wisconsin solution leak test by gravity through cannulated iliac Y graft inflow with clamped portal vein.

be cost-effective. Randomized trials to investigate superiority and cost-effectiveness of this technique are justified.

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