Letter to the editor

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Simultaneous kidney-pancreas transplantation using a horseshoe kidney

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Sir: The horseshoe kidney is the most common of all renal fusion anomalies. It occurs in approximately 1 in 400 individuals and is twice as common in males [11]. Transplantation of such kidneys has usually been avoided because of their anomalous vasculature [4, 6], association with other renal anomalies [11], and predisposition to renal disease [12]. However, in view of the scarcity of cadaver kidneys for transplantation, even these kidneys should, under certain circumstances, be used for grafting. A review of the literature reveals nine cases involving the use of horseshoe kidneys for transplantation. In six instances, the horseshoe kidney was divided and transplanted into two recipients [1, 2, 5, 8, 10, 12, 13], and three times the kidney was transplanted en bloc into a single recipient [3, 7, 9]. We report the first case of successful simultaneous kidney-pancreas transplantation using a horseshoe kidney.

A 22-year-old male became an organ donor following brain death resulting from a closed head injury. During the multiple organ procurement, it was noted that he had a normal, healthy-looking pancreas and a horseshoe kidney fused at the lower pole. In addition to multiple vessels in each hilum, the right lower pole received a small branch from the right iliac artery; therefore, the aortic flush was accomplished by cannulation of the left common iliac artery. The entire pancreas was removed with a 10-cm segment of duodenum and the kidneys were removed en bloc with 20-cm lengths of aorta and inferior vena cava.

The recipient was a 36-year-old male with a 22-year history of severe diabetes mellitus, which had resulted in retinopathy, neuropathy, and end-stage renal failure requiring hemodialysis.

During the bench dissection the horseshoe kidney was noted to have three arteries with a single vein and ureter on the left side (Fig. 1). On the right side, two arteries and a single vein and ureter entered the hilum and a small lower pole branch originated from the right common iliac artery. The kidney was divided to the right of the midline, preserving all three left-sided arteries on a common aortic patch. The much smaller right portion of the kidney was thought to have an inadequate blood supply and was discarded. The left kidney was then implanted into the recipient's left iliac fossa. After immediate function of the renal graft was documented, the pancreatic graft was implanted into the patient's right iliac fossa using the duodenal segment for a duodenovesicostomy. Both organs func-

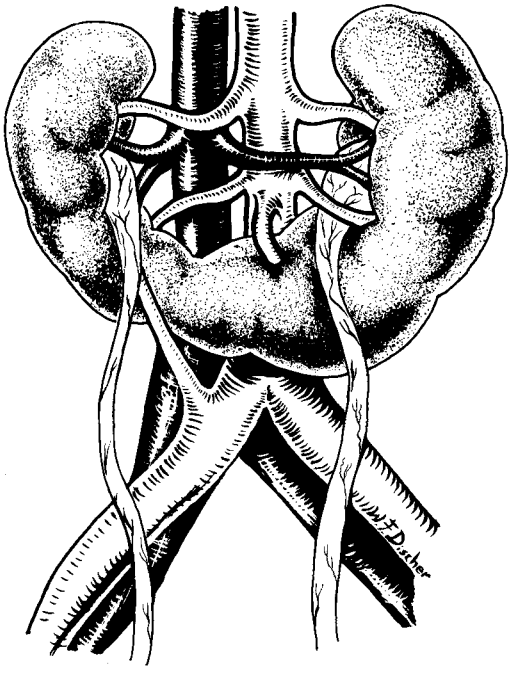

Fig. 1. Donor kidney at time of organ recovery and prior to division and transplantation

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tioned well from the beginning, there was no postoperative surgical or other complication, and the patient was discharged from the hospital on the 13th postoperative day.

The recipient's kidney and pancreas have continued to function for more than 2 years, during which time he has not required dialysis or exogenous insulin administration. His random serum glucose levels are below 100 mg/dl and his serum creatinine is currently 1.7 mg/dl.

Horseshoe kidneys may be used for transplantation only if the donor's history is free of recurrent urinary tract infections and calculus formation. An en bloc technique should always be used for donor nephrectomy with removal of a large segment of the aorta and the vena cava with part of the common iliac vessels. In most cases, separation of the kidney is done via bench surgery and both parts of the kidney are transplanted into different patients. In our case, the vascular anatomy prompted us to divide the kidney well to the right of the midline. The much larger left part of the kidney was then successfully transplanted and the smaller right part of the kidney was discarded. Only after good blood supply and immediate function of the renal graft were documented was the pancreaticoduodenal graft implanted. Good function of both renal and pancreatic grafts more than 2 years after transplantation shows that horseshoe kidneys can be used safely, even in this more complex situation.

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