Restored Kidney Transplant After Resection of Renal Cell Carcinoma: Preliminary Results of 10 Cases

Introduction and Objective: Kidneys after nephrectomy for small renal cell carcinomas (RCC) have been considered as a potential source for solving the organ donor crisis. Buell, Mannami, and Nicol respectively reported 14, 8, and 31 transplant procedures using kidneys after resection of RCC. Nalesnik et al. recently performed the first step towards evaluating the risk of cancer transmission to optimize organ usage. However, no prospective data are available on the outcomes. To address this issue and raise awareness, we performed a prospective clinical trial that utilized resected kidneys for transplant into unrelated recipients after restoration.
Materials and Methods: Our study of restored kidney transplant had an estimated enrollment of 5 patients with one year of follow-up and was approved by Tokushukai Joint Ethics Committee and registered with U.S. ClinicalTrials.gov. Donors were selected from among patients who opted to undergo nephrectomy for small RCC after extensive discussion of other possible treatment modalities. After nephrectomy, the tumor was removed from each kidney, which was restored and transplanted into an unrelated recipient who was selected by a third-party selection committee based on the blood group match, high clinical evaluation score, and negative cross-match test. The trial was extended to enroll another 5 patients after the fifth transplant because of strong requests from other patients.
Results: In the initial trial, five men aged 51-79 years were the kidney donors. The nephrometry RENAL scores for their renal tumors (Kutikov-Uzzo) were 5-7, suggestive of low-moderate complexity. A total of 56 dialysis patients aged 31-83 years (mean: 58.7 years) were enrolled as candidate recipients. Two recipients had a history of kidney transplant. All patients received triple immunosuppression and four are steroid-free. Four recipients have experienced rejection episodes so far and the latest serum creatinine levels range from 1.21 to 2.58 mg/dl after 17 to 27 months of follow-up. There has not been any recurrence of RCC. In the extended trial, 5 patients aged 46-65 years have undergone restored kidney transplant so far and their recent creatinine levels range from 1.00 to 1.94 mg/ml without tumor recurrence at 1 to 14 months after transplant.
Conclusions: Selected candidates can benefit from restored kidney transplant, achieving good renal function without recurrence of RCC. Transplant candidates may benefit from accepting these marginal kidneys (discarded kidneys with small RCC) in exchange for a shorter waiting time on dialysis.