New score seeks to expand pool of kidneys available for transplant

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With over 120,000 patients in the United States waiting for a kidney transplant, scientists and physicians are constantly looking to expand the pool of available organs through increasing donation and optimizing allocation. Researchers from Thomas Jefferson University analyzed data from thousands of transplants and developed a scoring system for donor kidneys that they hope might expand the pool of available organs in two ways. They published their findings in the *Annals of Transplantation*.

"The gift of life is so precious. It's imperative that we use each and every organ in the most efficient way for our patients, donors and their families," said Cataldo Doria, M.D., Ph.D., MBA, Nicoletti Family Professor of Transplant Surgery and Director of the Jefferson Transplant Institute. "We decided to look closely at dual kidney transplantation and found that there may be ways to optimize their use by a scoring algorithm."

Dr. Doria and his team retrospectively analyzed United Network for Organ Sharing (UNOS) data for 1,547 dual kidney transplants (DKT) and 26,381 expanded-criteria single kidney transplants (eSKT). Dual kidney transplants use two marginal donated kidneys in one recipient, increasing the amount of nephron mass and blood cleansing capability. Expanded-criteria single kidney transplants use kidneys from older donors or those with other certain risk factors. Thirteen donor variables were found to be significantly associated with graft survival including age, gender, body mass index, history of diabetes, hypertension, smoking and certain laboratory tests. Based on these criteria, the team developed

a singular score for the donated organs which showed strong correlation with better survival in dual kidney transplants.

The scoring system could help expand the pool of available kidneys in two ways. First, by identifying which donor organs would be best transplanted together. The algorithm identified a score range where donors transplanted as dual had 70 percent greater median graft survival when compared with matched donors transplanted as single. Sometimes, kidneys with marginal function are offered to surgeon after surgeon as a single, who turn them down in the hopes of a better kidney in the future. This wastes precious time and sometimes the kidney isn't used. If both kidneys are offered at the same time earlier in the process, a surgeon might be more willing to take them for their patient as the amount of functional kidney cells is increased. Jefferson researchers theorize that better identifying dual transplant kidneys at the start of the donation process will prevent some kidneys from not being used.

Second, the researchers' score might also increase the amount of available organs by identifying which donors should not be offered as dual, because these donors did not demonstrate any improved median survival when compared with matched donors transplanted as single. "According to our matched samples, the 77 percent of dual kidney transplants with middle or low range scores had no better or worse media graft survival than matched single transplants," said first author Adam Johnson, M.D., M.P.H. "This suggests that those transplants may have been better used by two recipients or not at all."

Future prospective studies will be needed to demonstrate the external validity, but researchers are hopeful that the score may help standardize organ allocation for dual kidney transplantation in the future and save additional lives.

More information: Adam P. Johnson et al, Dual Kidney Allocation

Score: A Novel Algorithm Utilizing Expanded Donor Criteria for the Allocation of Dual Kidneys in Adults, *Annals of Transplantation* (2016). DOI: 10.12659/AOT.898328