

Renal transplant complications: Moving toward comparison of relevant parameters and further improvement in outcomes

Ronald B. Moore, MD, PhD, FRCSC, FACS

Department of Surgery and Oncology, University of Alberta, Edmonton, AB, Canada

Cite as: *Can Urol Assoc J* 2017;11(12):394-5. <http://dx.doi.org/10.5489/auaj.4990>

Published online November 1, 2017

See related article on page 388.

The article, “Complications in the 90-day postoperative period following kidney transplant and the relationship of the Charlson Comorbidity Index,” from our institution, is unique in highlighting Clavien graded complications of renal transplant (RenTx) at a single institution over a 90-day postoperative window. The paper has its limitations, including its retrospective nature, abstracted data, and non-procedure-specific reported complications, which the authors acknowledge. It highlights the relative degree of complications between cystectomy and liver transplantations in the discussion, but doesn’t address or discuss the existing risks of these complications in the dialysis (D) and non-dialysis (ND) chronic kidney disease (CKD) population.

There is a high incidence of cardiovascular (CV) disease in the CKD population (10–40 times), with a report of CV event at transplant as high as 10%.^{1,2} In addition, there is a high incidence of anemia in the CKD population despite the use of synthetic erythropoietin (EP). Large studies have shown an increased incidence of CV complications in CKD patients treated aggressively with EP. Most CKD programs, therefore, only treat with EP to a target hemoglobin of 90–110 G/L (similar to the level seen in this study). Even with this target level, 10–20% of NDCKD patients are transfused when admitted to hospital for other causes (likely on the basis of blood work and myelosuppression).³ This incidence is likely higher in the hemodialysis population, where there is potential for injury to red blood cells (RBCs) and the risk of filter clotting, the risk of which is higher in patients that can not receive anticoagulation with their dialysis run (as in the case of perioperative RenTx or other surgeries). A prior study looking at the effects of blood transfusion after RenTx reported a 45% transfusion rate, with 36% occurring within the first month of transplantation.⁴

I think it is also important to state that in our socialized healthcare system, RenTx is performed for three key benefits:

quality of life, survival, and cost-saving. Multiple studies have shown that the sooner a person can be transplanted (ideally pre-emptively), the better the outcomes; however, the demand outstrips the supply despite many strategies to increase the number of donor kidneys. This has led to many kinds of deceased donor kidneys (expanded criteria donor [ECD], determination by cardiac death [DCD] as opposed to neurological determination of death [NDD], and exceptional release kidneys [usually infective risk]), all with different risks. Regardless, all patients benefit from a RenTx if they get a functioning allograft and the perioperative risks are not too high.⁵ The risk-benefit ratio, however, takes different times to be realized, depending on the health of the recipient (up to 325 days); in fact, some of the higher-risk patients see the greatest benefit, as was originally pointed out by Federick Port et al, among others.^{6–8} With a functioning RenTx, the estimated cost saving to the Canadian healthcare system is \$250 000/five years.⁹

Today, we are transplanting more elderly patients, and a greater percentage have end-stage renal disease (ESRD) secondary to diabetic nephropathy. Despite this, it is reassuring to see that the outcomes are unchanged or improved, with similar one-year survival rates.¹⁰ In the not-too-distant future, the American College of Surgeons will launch its Transplant Quality Improvement Program (TransQIP).¹¹ At present, this program is in the beta phase of testing, but when implemented across all programs, it will hopefully allow comparison of relevant parameters and further improvement in transplant outcomes.

Competing interests: The author reports no competing personal or financial interests.

References

- Hart A, Weir MR, Kasiske BL. Cardiovascular risk assessment in kidney transplantation. *Kidney Int* 2015;87:527-34. <https://doi.org/10.1038/ki.2014.335>
- Shroff GR, Akkina SK, Miedema MD, et al. Troponin I levels and postoperative myocardial infarction following renal transplantation. *Am J Nephrol* 2012;35:175-80. <https://doi.org/10.1159/000335679>
- Lawler EV, Bradbury BD, Fonda JR, et al. Transfusion burden among patients with chronic kidney disease and anemia. *Clin J Am Soc Nephrol* 2010;5:667-72. <https://doi.org/10.2215/CJN.06020809>

4. Scornik JC, Schold JD, Bucci M, et al. Effects of blood transfusions given after renal transplantation. *Transplantation* 2009;87:1381-6. <https://doi.org/10.1097/TP.0b013e3181a24b96>
5. Tonelli M, Wiebe N, Knoll G, et al. Systematic review: Kidney transplantation compared with dialysis in clinically relevant outcomes. *Am J Transplant* 2011;11:2093-109. <https://doi.org/10.1111/j.1600-6143.2011.03686.x>
6. Port FK, Wolfe RA, Mauger EA, et al. Comparison of survival probabilities for dialysis patients vs cadaveric renal transplant recipients. *JAMA* 1993;270:1339-43. <https://doi.org/10.1001/jama.1993.03510110079036>
7. Wolfe RA, Ashby VB, Milford EL, et al. Comparison of mortality in all patients on dialysis, patients on dialysis awaiting transplantation, and recipients of a first cadaveric transplant. *N Engl J Med* 1999;341:1725-30. <https://doi.org/10.1056/NEJM199912023412303>
8. Gill JS, Lan J, Dong J, et al. The survival benefit of kidney transplantation in obese patients. *Am J Transplant* 2013;13:2083-90. <https://doi.org/10.1111/ajt.12331>
9. Kidney Foundation of Canada. Available at <https://www.kidney.ca/>. Accessed October 23, 2017.
10. Canadian Institute for Health Information 2016. Available at <https://www.cihi.ca/en>. Accessed October 23, 2017
11. Parekh J, Ko C, Lappin J, et al. Transplant-specific quality initiative — introducing TransQIP: A joint effort of the ASTS and ACS. *Am J Transplant* 2017;17:1719-22. <https://doi.org/10.1111/ajt.14315>

Correspondence: Dr. Ronald B. Moore, Department of Surgery and Oncology, University of Alberta, Edmonton, AB, Canada; rbmoore@ualberta.ca

Academic Urologist, Division of Urology St Michael's Hospital, University of Toronto

St. Michael's
Inspired Care.
Inspiring Science.

The Department of Surgery, Division of Urology at St. Michael's Hospital in conjunction with the University of Toronto, Division of Urology is accepting applications from well-qualified applicants for the post of academic Urologist. The effective date of the appointment is July 1, 2018.

The successful candidate will assume the role of a Surgeon-Investigator, with a research interest in basic, clinical or translational research in line with his or her clinical subspecialty in endourology, minimally-invasive surgery and transplantation. The candidate will have completed post Residency Fellowship training in Endourology, Laparoscopic and Robotic Surgery, and will have expertise in Renal Transplantation. The candidate will be expected to demonstrate experience and training in the surgical and medical management of urolithiasis and endourology, advanced laparoscopic and robotic-assisted Urologic Surgery, and ability to perform renal transplantation, at a level appropriate for an academic tertiary care level referral centre. He/she will have, or be working towards a Master's Degree or PhD in a relevant field. He/she will be eligible for appointment in the Department of Surgery at the University of Toronto at a rank commensurate with his/her qualifications and academic achievements, starting at the rank of Assistant Professor.

The successful candidate will be expected to possess exemplary clinical skills and a demonstrated commitment to life-long learning. A commitment to excellence in surgical education at all levels will be expected. The candidate will be expected to have shown exceptional leadership, interpersonal and collaboration skills. The candidate will be required to possess a skill set and requisite training to further advance the clinical and academic productivity of the Division of Urology.

The successful candidate must be eligible for the equivalent of Royal College certification in Urology and qualify for licensure with the College of Physicians and Surgeons of Ontario.

St. Michael's Hospital is a fully-affiliated teaching hospital with the University of Toronto, and a Level 1 Trauma centre located in downtown Toronto, providing primary, secondary and tertiary care services for Toronto, Ontario and beyond. The Department of Surgery at St. Michael's Hospital enjoys a proven track record in tertiary care surgical services with strengths in each of the surgical specialties. The Division of Urology at St. Michael's Hospital and the University of Toronto is a provincial referral centre for endourology and shock wave lithotripsy, and one of the largest renal transplantation programs in the province. The Division of Urology engages in clinical, administrative and translational research in collaboration with the Li Ka Shing Knowledge Institute, the Keenan Research Centre, the University of Toronto, and Ryerson University.

The successful candidate will join the Division of Urology practice plan, with earnings based on fee for service billings and support from the hospital, division, and university. Estimated earnings are expected to be over \$300,000, commensurate with qualifications and experience. Estimate based on fee for service billings.

Applications, accompanied by a cover letter, curriculum vitae and names of three references should be sent via email no later than January 15, 2018 to Dr. Kenneth Pace, c/o Suzanne Meade, St. Michael's Hospital, 30 Bond Street, CC16-044, Toronto, ON, M5B 1W8. Email: meades@smh.ca.

In accordance with Canada's immigration policy, this advertisement is directed to Canadian Citizens and permanent residents of Canada. St. Michael's Hospital and the University of Toronto are strongly committed to diversity, and welcome applications from visible minority group members, women, Aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to the further diversification of ideas.

For more information about the Faculty of Medicine/Department of Surgery, please visit our home page at <http://surgery.utoronto.ca>.