

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

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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%.<sup>1,2</sup> 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).<sup>3</sup> 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.<sup>4</sup>

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.<sup>5</sup> 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.<sup>6–8</sup> With a functioning RenTx, the estimated cost saving to the Canadian healthcare system is \$250 000/five years.<sup>9</sup>

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.<sup>10</sup> In the not-too-distant future, the American College of Surgeons will launch its Transplant Quality Improvement Program (TransQIP).<sup>11</sup> 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.

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