

INVITED COMMENTARY

Long-term after donation, who are the living kidney donors?*

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As the most important issue in kidney transplantation today is the tremendous shortage of donor organs, the waiting list continues to grow and, as a result, the waiting time gets longer. One solution to this problem is to increase the number of living donor kidney transplants. It is now well established that renal transplantation using living donors offers many advantages including better short- and long-term graft survival rates when compared with cadaver donors, avoidance on the long wait on dialysis and better opportunity to perform preemptive transplant [1–3]. However, all these advantages must be relativized by the fact that donor needs to have a major operative procedure that is likely to be associated with morbidity, mortality and the potentially negative long-term consequences of living with a single kidney.

In fact, performing a nephrectomy on healthy patients is not a harmless procedure, although it is seen as relatively low risk surgery these days. As a result, the risk of immediate death linked to living-donor kidney donation is estimated at 0.03% [4,5]. The probability of complications in the short-term, such as haemorrhage or infection, is also low. However, this does vary depending on the type of procedure used to perform the nephrectomy on

the donor (between 0.6% and 14%) although the use of laparoscopic nephrectomy has improved considerably the immediate postoperative recovery.

Donor long-term outcome have been less extensively studied and remain a critical aspect of living donation evaluation. A key question is to determine if donors will develop any form of kidney disease, even years post donation and by consequence, if they will have an accelerated course to kidney failure.

Numerous authors have reported on donor follow-up less than 20 years post donation [6]. Proteinuria, hypertension and elevated creatinine levels have been occasionally seen, but there is no evidence of any increased rate, beyond that expected in the age-matched population. In serial studies of donors with proteinuria, it does not seem to progress to kidney failure; these results are similar to the nondonor uninephrectomy studies.

Najarian *et al.* analysed in 1992 the cohort of living kidney donors after 20–30 years of follow-up [7]. In that report, authors compared 57 donors with an average age, 61.1 years with 65 siblings who had not donated (average age, 58.13 years). They have found no significant differences in mean serum creatinine levels, proteinuria or hypertension.

In a more recent study, J. Matas *et al.* [8] report on a larger series of donors after 20–30 years of follow-up, including a cohort after over 30 years of follow-up. Authors observed that average serum creatinine levels have not deteriorated, have little proteinuria, and an incidence of hypertension similar to the age-matched general population. However, a few donors develop kidney insufficiency, which has progressed to ESRD in some. Of interest, 19 donors developed diabetes 6–34 years post donation. Of these, nine had no family history of diabetes.

In this issue of *Transplantation International*, Fournier *et al.* [9] present the first French very long-term follow-up of living kidney donors who have donated their kidney between 1952 and 2008 at Hopital Necker (Paris, France) and compared their results to those observed in the general population. They also focused on the 59 donors who have donated a kidney more than 30 years ago, the oldest donors population analysed to date. They reported that among the 310 donors who were located, the survival probabilities for this population were similar to those of the general population and end stage renal disease incidence was 581 per million population per year. Interestingly, all donors still alive also completed a medico-psychosocial questionnaire and give samples for serum creatinine and urinary albumin assays. Among the 204 donors who responded to the questionnaire, mean eGFR were excellent (mean GFR was 64.4 ± 14.6 ml/min per 1.73 m^2 and mean microalbuminuria was 27.0 ± 83 mg/g). Moreover, the donors who gave a kidney more than 30 years ago had a mean eGFR of 67.5 ± 17.4 $\mu\text{mol/l}$, a mean microalbuminuria level of 44.8 ± 123.2 mg/g and no one was dialyzed. According to the results of the psychosocial questionnaire, most donors never regretted the donation and consider that it has no impact on their professional or social lives.

This study represents so far the largest and oldest analysis of living kidney donors. It clearly indicates medical

safety of kidney donation. The fact that donors did not regret their donation is a good indicator of the absence of negative psychological consequences. Taken together, the result of the current and previous studies on long-term follow-up of kidney donors strengthen, if necessary, the need to promote this strategy, mainly in countries where living-donor related renal transplantation is still limited, with respect of the stringency of the donor selection process.

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