TRANSPLANT INTERNATIONAL

LETTER TO THE EDITORS

Decision making in pretransplant nephrectomy for polycystic kidneys, is it valid for horseshoe kidneys?

doi:10.1111/j.1432-2277.2012.01503.x

Dear Sirs,

Autosomal dominant polycystic kidney disease (ADPKD) is the most common genetic cause of chronic kidney disease. In ADPKD patients who are candidates for kidney transplantation, indications and timing for uni- or bilateral native nephrectomy remain controversial [1]. Indications for nephrectomy include creation of space, recurrent urinary tract infection, chronic pain, and hematuria [2]. Even in the absence of symptoms, some authors advocate pretransplant native nephrectomy to decrease the risk of post-transplant infection and hematuria [3,4]. However, preservation of residual native renal function is associated with prolonged survival in dialyzed patients [5, 6]. Rendering these patients anephric predisposes them to anemia, congestive heart failure, and hyperkalemia [7]. Furthermore, blood transfusions - sometimes required in case of bilateral nephrectomies – may sensitize the recipient, increasing the risk of allograft rejection [8]. Therefore, bilateral pretransplant nephrectomies are usually avoided unless a consequent living donor transplantation can be planned, thus limiting the dialysis period. Unilateral post-transplant nephrectomy is advocated by others to relieve chronic pain, early satiety, recurrent bleeding and/or infections, or in case of suspected malignancy [9]. Finally, certain authors combined simultaneous nephrectomy and transplantation to increase patient satisfaction caused by a single incision/procedure. Albeit performed safely in some series, the risks of this combined approach include unforeseen complications during the native nephrectomy, rupture of infectious cysts, torsion of the intra-abdominally located graft, significant fluid shifts, hypotension with ensuing allograft hypoperfusion, prolonged anesthetic exposure, all potentially jeopardizing immediate graft function or even leading to cancellation of the transplant [10,11]. Fuller therefore recommended this approach only in living donor kidney transplant recipients in case of a suspected renal mass and hematuria requiring blood transfusions [2].

Recently, we were confronted with a unique case in which a pretransplant bilateral nephrectomy seemed inevitable. A 56-year-old man with end-stage chronic kidney disease caused by ADPKD without history of hematuria, pain, or cyst infection was referred for transplantation. Physical examination revealed two large kidneys leaving insufficient space in the iliac fossae for an allograft. CT scan revealed a polycystic horseshoe kidney with a large isthmus connecting the lower poles besides limited space in the iliac fossae (Fig. 1). Two arteries supplied the right and one the left side, whereas a branch coming from the right common iliac artery supplied the isthmus. Horseshoe kidney is the most common renal fusion anomaly with an estimated incidence of 1/400 to 1/800 [12–14]. ADPKD has an estimated incidence of 1/250 to 1/5000 [13,14]. Consequently, the incidence of a polycystic horseshoe kidney is extremely rare and estimated between 1/134 000 and 1/8 000 000 [13].

The horseshoe kidney, with its lower poles and large isthmus located in both iliac fossae justified a pretransplant ''bilateral'' nephrectomy. The aberrant arterial blood supply (Graves type 3) [15] was an extra reason to perform a bilateral nephrectomy because of the lack of a clear surgical plane and the risk of compromised blood supply to the remaining kidney. Nephrectomy was done through a longitudinal midline incision; the resected kid-

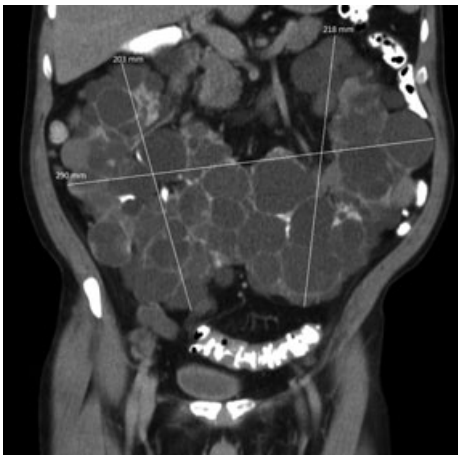

Figure 1 Coronal reconstructed CT image revealing the size and abdominal-pelvic position of the right and left halves of the polycystic horseshoe kidney at the level of the isthmus.

neys measured 221 × 125 × 105 mm and 220 × 120 × 131 mm, weighing 880 and 914 g, respectively. After an uneventful postnephrectomy course, a successful transplantation was performed 27 months later.

Tom Verbelen,[1] Tom Darius,[2]
Jacques Pirenne[1]* and Diethard Monbaliu[1]*
1 Department of Abdominal Transplant Surgery, University Hospitals Leuven, Leuven, Belgium
2 Starzl Unit Abdominal Transplantation, University Hospitals St. Luc, Université catholique de Louvain, UCL, Brussels, Belgium
e-mail: diethard.monbaliu@uzleuven.be

*D. M. and J. P. hold a chair of the Centrale Afdeling voor Fractionering (CAF) Vilvoorde, Belgium.

References

1. Patel P, Horsfield C, Compton F, Taylor J, Koffman G, Olsburgh J. Native nephrectomy in transplant patients with autosomal dominant polycystic kidney disease. *Ann R Coll Surg Engl* 2011; **93**: 391.
2. Fuller TF, Brennan TV, Feng S, Kang S, Stock PG, Freise CE. End stage polycystic kidney disease: indications and timing of native nephrectomy relative to kidney transplantation. *J Urol* 2005; **174**: 2284.
3. Brazda E, Ofner D, Riedmann B, Spechtenhauser B, Margreiter R. The effect of nephrectomy on the outcome of renal transplantation in patients with polycystic kidney disease. *Ann Transplant* 1996; **1**: 15.
4. Schillinger F, Montagnac R, Jourdan AL, *et al.* Bilateral nephrectomy before renal transplantation in autosomal polycystic renal disease. *Nephrologie* 1997; **18**: 181.
5. Temorhuizen F, Dekker FW, van Manen JG, *et al.* Relative contribution of residual renal function and different measures of adequacy to survival in hemodialysis patients: an analysis of the Netherlands Cooperative Study on the Adequacy of Dialysis (NECOSAD)-2. *J Am Soc Nephrol* 2004; **15**: 1061.
6. Rocco MV, Frankenfield DL, Prowant B, Frederick P, Flanigan MJ, Centers for Medicare & Medicaid Services Peritoneal Care Indicators Study Group. Risk factors for early mortality in U.S. peritoneal dialysis patients: impact of residual renal function. *Perit Dial Int* 2002; **22**: 371.
7. Calman KC, Bell PR, Briggs JD, Hamilton D, MacPherson SG, Paton AM. Bilateral nephrectomy prior to renal transplantation. *Br J Surg* 1976; **63**: 512.
8. Katznelson S, Bhaduri S, Cecka JM. Clinical aspects of sensitization. *Clin Transpl* 1997; 285–96. PubMed PMID: 9919412.
9. Kirkman MA, van Dellen D, Mehra S, *et al.* Native nephrectomy for autosomal dominant polycystic kidney disease: before or after kidney transplantation? *BJU Int* 2011; **108**: 590.
10. Kramer A, Sausville J, Haririan A, Barlett S, Cooper M, Phelan M. Simultaneous bilateral native nephrectomy and living donor renal transplantation are successful for polycystic kidney disease: the university of Maryland experience. *J Urol* 2009; **181**: 724.
11. Nunes P, Mota A, Alves R, *et al.* Simultaneous renal transplantation and native nephrectomy in patients with autosomal-dominant polycystic kidney disease. *Transplant Proc* 2007; **39**: 2483.
12. Trapp JD, Zukoski CF, Shelley HS, Goldner F. Nephrectomy for polycystic horseshoe kidney with successful cadaver renal allograft. *South Med J* 1965; **58**: 1370.
13. Correa RJ, Paton RR. Polycystic horseshoe kidney. *J Urol* 1976; **11**: 802.
14. Dobranowski J, Somers S, Pirani M. Adult polycystic horseshoe kidney. *J Cancer Assn Rad* 1986; **37**: 208.
15. Graves FT. The arterial anatomy of the congenitally abnormal kidney. *Br J Surg* 1969; **56**: 533.