

CASE REPORTS

DUAL KIDNEY TRANSPLANTATION: A CASE REPORT

İKİLİ BÖBREK TRANSPLANTASYONU : BİR VAKA TAKDİMİ

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SUMMARY: The large need for organs in renal transplantation programs and the insufficiency of living related donation lead us to evaluate every cadaveric organ available from marginal donors. Dual kidney transplantation is one way of using these marginal donors. We present a case of a five-year-old boy with brain death whose organs were harvested and both kidneys transplanted via an en bloc technique to a 27-year-old male patient. The kidneys functioned immediately after transplantation and the patient was discharged with a creatinine level of 0.7 mg/dl.

Key Words: Dual Kidney Transplantation, Marginal Donors.

ÖZET: Böbrek transplantasyonu programlarındaki giderek artan organ ihtiyacı ve canlı akraba donörlerin bu ihtiyacı karşılamadaki yetersizliği, marjinal donörler de dahil, mümkün olan tüm kaynakların kullanılmasını gündeme getirmektedir. Pediatrik kadavra donörlerden ikili böbrek transplantasyonu da bu marjinal olarak kabul edilen organların bir kullanım yoludur. Çalışmamızda beyin ölümü tanısı sonrası organları bağışlanan 5 yaşındaki bir çocuğun böbreklerinin en blok teknikle 27 yaşında bir erişkine transplante edilmesi anlatılmaktadır. Böbrek, transplantasyon sonrası hemen fonksiyon göstermiş ve hasta 0.7 mg/dl serum kreatin düzeyi ile sorunsuz olarak taburcu edilmiştir.

Anahtar Kelimeler: İkili Böbrek Transplantasyonu, Marjinal Donörler.

INTRODUCTION

There has been always a disparity between the supply and demand for cadaveric organs. Various strategies have emerged in response, such as relaxing strict donor selection criteria. Many transplant teams are obliged to use some marginal donors, such as those below 5 and over 60 years old, diabetics, non-heart beating cases and donors with abnormal kidneys. These donors can have significant nephron loss, usually due to age, diabetes mellitus, hypertension or intrinsic renal disease. Keeping in mind that nephron mass is the major determinant of chronic allograft function, increasing the number of viable nephrons by simultaneously transplanting two kidneys to the same recipient effectively prevents

progressive deterioration of renal functions, especially for very small pediatric kidneys and kidneys from elderly donors where glomerulosclerosis is more common. Recently, many transplant centers have increasingly begun using marginal kidneys by dual kidney transplantation with good results (1-7).

CASE REPORT

A five-year-old male donor with cerebral death after a traffic accident was taken to the operating room for organ harvesting after family consent was obtained. Liver and kidney transplantation teams worked together and shortly after harvesting the liver, both kidneys were extracted as a single unit with the aorta and

vena cava inferior. Upper openings of the aorta and cava were oversewn by a running 5.0 polypropylene suture. Since there was no suitable patient on our waiting list, the kidney was referred to the Ministry of Health, National Organ and Tissue Transplantation Coordination Center and the right patient was found at the SSK Etlik Hospital. Both kidneys were transplanted to a 27-year-old male patient - whose primary renal disease was Alport's syndrome - as a single unit within 18 hours of cold ischemia. Recipient and donor shared 1 A, 1 B and 1 DR HLA antigens.

Arterial anastomosis was performed to the external iliac artery, venous anastomosis to the external iliac vein both in an end-to-side fashion with 6.0 polypropylene sutures. Ureteroneocystostomy was performed with the extravesical Lich technique using a 5 F double J ureteral stent (Fig. 1).

The immunosuppression protocol of the patient was Cyclosporine-A 300 mg/day, Mycophenolate mofetil 2 g/day and prednisone 1 mg/kg/day. By the first postoperative day, the patient's urine volume was 2500 cc. Postoperative renal Doppler US and scintigraphy were normal (Figs. 2, 3). During the following 10 days, urine volume was satisfactory and the serum creatinine level decreased progressively. On the 13th postoperative day, because of bleeding of unknown origin, the patient was operated on and a small site of bleeding from the aortic cuff was located and sutured uncomplicatedly. The patient was discharged on

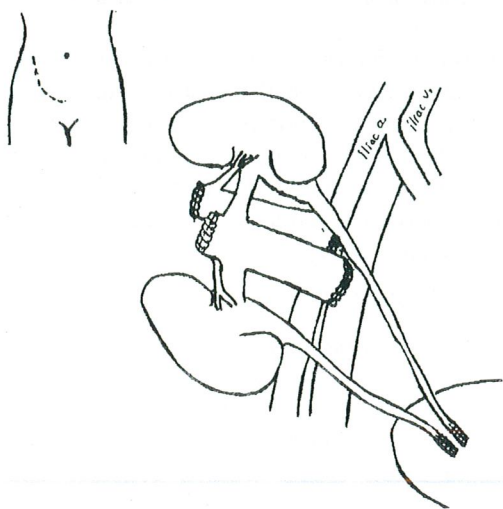


Fig. 1: Operative technique of en bloc pediatric kidney transplantation.

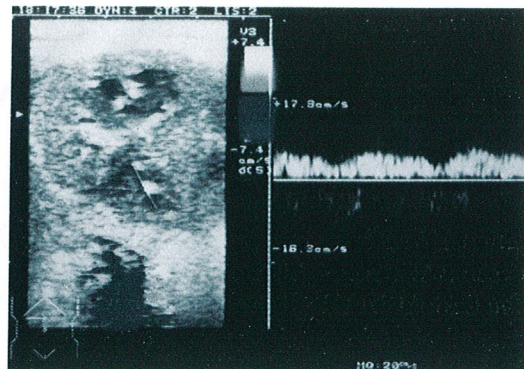


Fig. 2: Renal doppler US after transplantation.

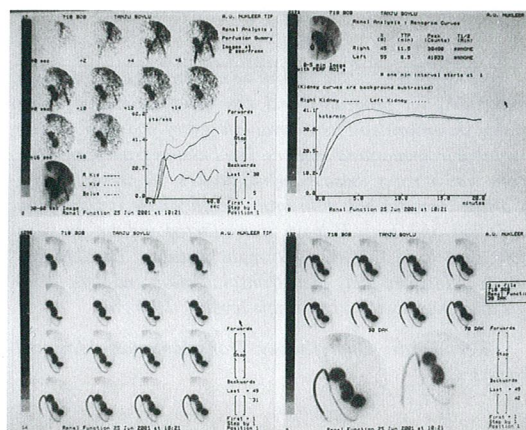


Fig. 3: Renal scintigraphy after transplantation.

the postoperative 25th day with a serum creatinine level of 0.7 mg/dl.

DISCUSSION

The gap between the number of organs available and the number of patients on waiting lists continues to increase. Most transplant centers have relaxed their donor criteria and have started to use marginal donors in order to overcome the need for cadaveric organs. We define donors as being marginal if they are: 1) donors below 5 years old; 2) donors over 60 years old; 3) diabetic donors; 4) cadaveric donors with prolonged cold ischemia times; 5) non-heart beating donors; and 6) others, e.g., kidneys with

multiple vascular supplies, ABO incompatible cases, anomalous kidneys like horseshoe kidneys, and double collecting systems (2-5).

Remuzzi et al. selected these marginal kidneys when scoring their histologic damage (3). According to this scoring system, kidneys were referred on for single or double transplantation or they were refused. Jerius et al. also advocate dual kidney transplantation using marginal donors with significant glomerulosclerosis (5). Andres et al. suggested double kidney transplantation for donors that have more than 15% glomerulosclerosis in kidney biopsies (7). Khauli's proposal for pediatric en bloc transplantation was that these kidneys have a very narrow vascular supply, but it was very easy to make anastomosis with the aortic and caval cuff, and a small renal mass may probably confront glomerular hyperfiltration. Also, their vulnerability is more common under cyclosporine immunosuppression (1). In most of the studies about dual kidney transplantation from pediatric donors, the aim was to overcome the problem of hyperfiltration. Heaf et al. concluded that the poor long-term prognosis of acute rejection is due to hyperfiltration-mediated injury secondary to initial renal damage (8). In another study, it was suggested that the greater the nephronal mass, the lower the incidence of both acute and chronic rejection (9). In our case, we transplanted a 5-year-old child's kidney (22 kg) to an 27-year-old male adult (60 kg). The kidneys' functions were extremely good and in the early postoperative period we obtained a 75 ml/min creatinine clearance. We believe that if there is no suitable patient according to renal mass, then organs must be used together.

Since the demand for cadaveric organs is continuing to increase, every organ available must be considered for transplantation, or even shared if possible. As our knowledge increases for the outcome of transplantations from marginal donors, we will be more ready to assist in taking patients from dialysis to normal life. Dual kidney transplantation from very small pediatric donors is one way to use these marginal kidneys to overcome long-term hyperfiltration problems and for longer term graft and patient survival.

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