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Open Donor Nephrectomy is a Safe Approach for Starting Kidney Transplantation

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Abstract

Aim: Living kidney donation is important due to the shortage of organ donors in Turkey. Classic retroperitoneal open donor nephrectomy is more beneficial as it can prevent intraperitoneal organ injuries and postoperative adhesion formation. Here we have presented our initial experience about donors who were undergone open donor nephrectomy.

Material and Methods: We retrospectively analyzed 14 donors who were undergone open nephrectomy between November 2010 and June 2011. We reviewed demographic data, intraoperative and postoperative complications, hospital stay, and serum creatinine levels (discharge time, postoperative maximum level and currently) for these donors.

Results: Fourteen donors were operated during this period. The male to female ratio was 8:6 among donors. Mean age was 43.57 (range; 27-68) years. Mean body mass index was 27.71 (range; 21.3-36.1). Five right and nine left kidneys were harvested. There was no intraperitoneal organ injury. All kidney grafts started to function immediately. There was no vascular thrombosis in the transplanted kidneys. There was one major hemorrhagic complication requiring reoperation (7.1%). There were three minor wounds complications (21.4%). None of the donors had incisional hernia. Mean postoperative hospitalization time was 5.85 (range; 4-18) days. Mean flow up period was 125 days (range; 18-210 days). Mean serum creatinine level of discharge time, postoperative maximum level, and currently were; 1.04 mg/dL (range; 0.6-1.7); 1.26 mg/dL (range; 0.8-1.9); 1.08 mg/dL (range; 0.78-1.41) respectively.

Conclusions; We did not have any major complication in our initial series for open donor nephrectomy. For those who are starting kidney transplantation, open donor nephrectomy is a safe method.

Key Words: Nephrectomy; Kidney Transplantation; Living Donor.

Böbrek Nakline Başlarken Açık Donör Nefrektomi Güvenli Bir Yaklaşımdır

Özet

Amaç: Türkiye'de canlı vericili böbrek nakli, organ bağışının azlığı nedeni ile oldukça önemlidir. Klasik retroperitoneal açık donör nefrektomi, intraperitoneal organ yaralanması ve postoperataif adezyonları önlemesi bakımından faydalı bir yöntemdir. Biz de kliniğimizde açık donör nefrektomi geçiren hastalarda başlangıç deneyimlerimizi sunmayı amaçladık.

Gereç ve Yöntemler: Kasım 2010 ve Haziran 2011 tarihleri arasında açık donör nefrektomi yapılan 14 hasta retrospektif olarak analiz edildi. Bu donörlerde demografik özellikler, intraoperatif ve postoperative komplikasyonlar, hastanede kalış süresi, serum kreatinin seviyeleri (taburculuk zamanında, postoperative maksimum seviyeleri ve şimdiki değerleri) gözden geçirildi.

Bulgular: Bu dönemde 14 donör opere edildi. Erkek kadın oranı 8:6 idi. Ortalama yaş 43.57yıl (27y-68y), ortalama vücut kitle indeksi 27.71 kg/m² (21.3-36.1 kg/m²) idi. Beş sağ böbrek, 9 sol böbrek nefrektomi yapıldı. İntraoperatif organ yaralanması gözlenmedi. Tüm greftler hemen çalışmaya başladı. Transplante edilen böbreklerde vasküler tromboz olmadı. Bir adet reoperasyon gerektiren major kanama gözlendi (%7.1). Üç hastada minor yara komplikasyonları gözlendi (%21.4). Hiçbir hastada insizyonel herni gözlenmedi. Ortalama hastanede kalış süresi 5.85 gün (4-18gün), ortalama takip süresi 125gün (18-210 gün) idi. Ortalama serum kreatinin, taburculuk zamanında, postoperative en yüksek olduğu seviye ve şimdiki değerleri sırasıyla; 1.04 mg/dL (0.6-1.7 mg/dL); 1.26 mg/dL (0.8-1.9 mg/dL); 1.08 mg/dL (0.78-1.41 mg/dL) idi.

Sonuç: Açık donör nefrektomi yaptığımız başlangıç serimizde major komplikasyon ile karşılaşmadık. Bu nedenle böbrek nakline yeni başlayan merkezler için başlangıçta açık donör nefrektominin güvenli bir yöntem olduğu kanaatindeyiz.

Anahtar Kelimeler: Nefrektomi; Böbrek Nakli; Canlı Verici.

INTRODUCTION

Number of patients with end-stage renal disease (ESRD) has increased gradually in our country as all over the word. The best treatment choice for patients with ESRD is kidney transplantation, which is associated with improved quality of life and better survival (1-6). Living organ donation is very important for these patients. This is the most effective way to solve the shortage of decease donor organ in a number of countries, including our own.

There are different donor nephrectomy techniques which are open and a lot of minimal invasive techniques. Our aim is to present our initial experience concerning open donor nephrectomy technique in this study.

MATERIAL AND METHODS

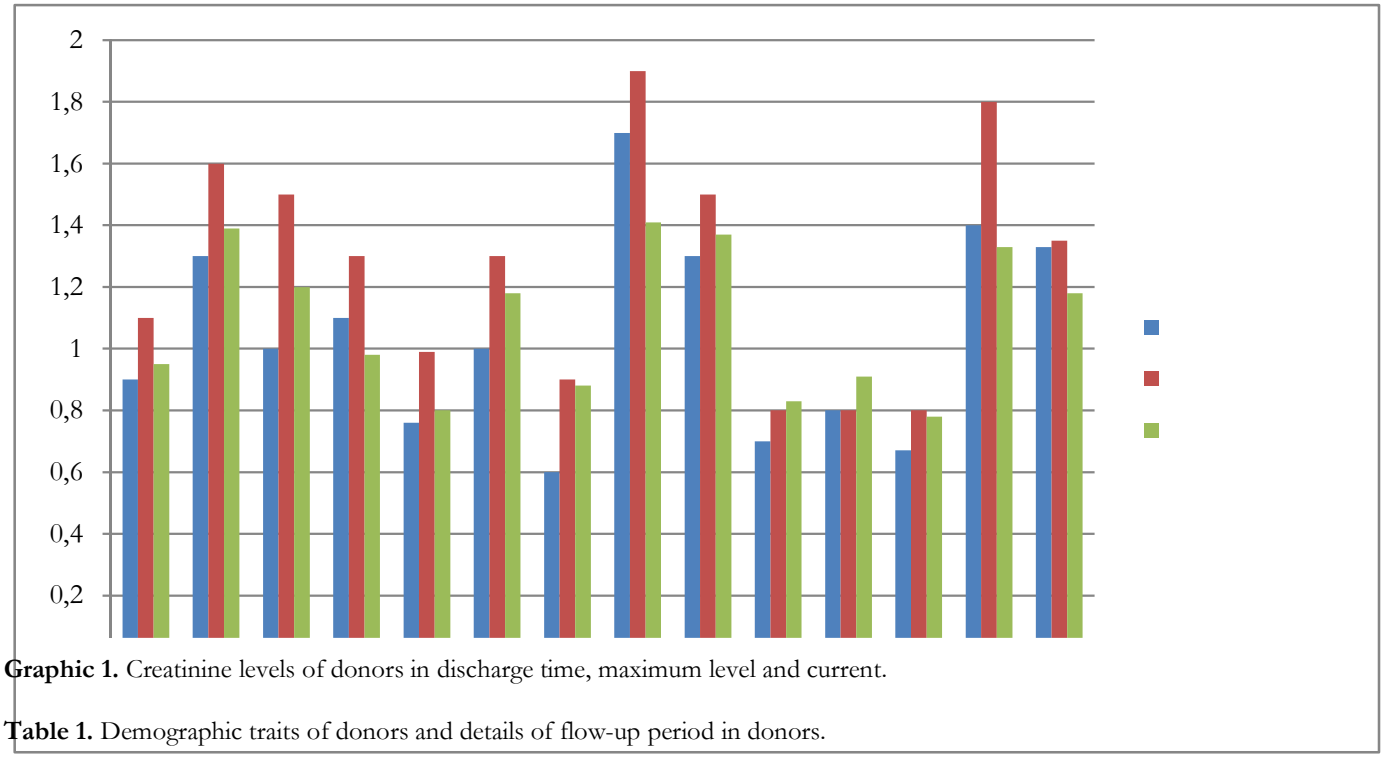
We retrospectively analyzed 14 donors undergone open nephrectomy between November 2010 and June 2011. We reviewed demographic data, intraoperative and postoperative complications, hospital stay, and serum creatinine level of discharge time, maximum level and currentstatus of these donors. All donors were evaluated according to the criteria of Amsterdam Forum (7).

The procedure was always performed from the same transplant surgeon team under general anesthesia. Our kidney transplant team has one transplant surgeon team. Because of this reason, we first started donor nephrectomy. Left kidney donor nephrectomy preferred if possible. We selected right kidney only when there was a potential benefit to the donor's remaining left kidney or in the preoperative evaluation period, if both kidneys were equal but right kidney had surgically any advantages, as there were multiple vessels of left kidney. Foley catheter was inserted in all of the donors. The patients were placed left or right flank position and 7-15 cm in length abdominal flank incision was performed. The anteromedial portion of Gerota's fascia was opened; the upper pole of the kidney was dissected. The ureter was then dissected together with the gonadal vein at the level of the iliac vessels. The vascular and fatty tissue in the triangular region encompassing the ureter was preserved. Dissection of the renal hilus was started with renal vein. The adrenal, lumbar and gonadal veins were dissected, ligated and divided. The renal artery was then freed down to the aorta. The adrenal gland was separated from upper pole of kidney, and the remainder of the upper pole was dissected. The lateral attachments of the kidney were then dissected. After completing dissection, operation was halted for a while. And then, we prepared implantation area, which was extraperiotenal area in right or left iliac fossa in recipient. Having completed this procedure, we gave a break to the recipient operation. Then we again continued donor nephrectomy. The ureter was divided and ligated, and then renal artery was divided. Finally, renal vein was divided. The kidney was removed and perfused in back table. We used routinely drain in the first nine cases and also in the thirteenth case. After donor nephrectomy, we immediately started implantation procedures in the recipient.

All of our donors were discharged from the hospital if they were ambulating, had sufficient pain control with oral medication, tolerance of diet and no wound complications or any other postoperative complications. We had zero donor mortality.

RESULTS

Fourteen donors were operated in this period. The male to female ratio was 8:6 among donors. Mean age was 43.57 (range; 27-68) years. Mean body mass index (BMI) was 27.71 (range; 21.3-36.1). One donor's BMI was higher than 35. The donors and recipients were related in 9 cases (64.3%), emotionally related 3 cases (21.4%) and unrelated 2 cases (14.3%). Five right and nine left kidneys were harvested. One donor had two arteries. There was no intraperitoneal organ injury. All kidney grafts started to function immediately. There was no vascular thrombosis in the transplanted kidneys. There was one major hemorrhagic complication requiring reoperation (7.1%). There were three minor wound complications (21.4%). Foley catheters were taken out on the first operative day in all donors except for one donor. His Foley catheter was taken out on the first postoperative day. But, he could not tolerate it. We inserted Foley catheter again. His Foley catheter was taken out on the second postoperative day without encountering any problem. None of the donors had incisional hernia. Mean postoperative hospitalization time was 5.85 (range; 4-18) days (Table 1). Mean flow up was 125 days (range; 18-210 days). Mean serum creatinine level of discharge time, postoperative maximum level, and currently were; 1.04 mg/dL (range; 0.6-1.7); 1.26 mg/dL (range; 0.8-1.9); 1.08 mg/dL (range; 0.78-1.41) respectively (Graphic 1).



Graphic 1. Creatinine levels of donors in discharge time, maximum level and current.

Table 1. Demographic traits of donors and details of flow-up period in donors.

Number of Donor	Age and Gender	Related of Donor	Donor BMI	Side of Nephrectomy	Drain Usage	Discharge Time From Hospital (POD)	Postoperative Complication (Yes or No. If yes, what was it?)
1	48, F	Mother	32.5	Left	Yes	6	No
2	50, F	Grandmother	30.5	Left	Yes	5	No
3	64, M	Father	23.5	Left	Yes	4	No
4	43, M	Father	23.7	Left	Yes	5	No
5	39, F	Mother	36.1	Left	Yes	7	No
6	34, M	Father	23.1	Right	Yes	5	Minor Wound Problem
7	68, M	Father	21.3	Left	Yes	5	No
8	48, M	Father	31.5	Left	Yes	5	No
9	50, M	Unrelated	29	Right	Yes	18*	Minor Wound Problem
10	30, F	Sibling	28.9	Right	No	5	Minor Wound Problem
11	27, F	Emotional related	26.4	Right	No	4	No
12	41, F	Emotional related	23.9	Right	No	4	No
13	34, M	Unrelated	31.6	Left	Yes	4	Reoperation
14	34, M	Emotional related	26	Left	No	5	No

BMI: Body Mass Index. POD: Postoperative Days. * Because of; recipient discharge time.

DISCUSSION

The patients with terminal renal insufficiency in the waiting list are increasing day by day. The most effective way is to increase the number of living donor to solve this problem in many countries as our own country, Turkey.

Currently, it is known that the health of live kidney donors at long-term follow-up is good and the procedure is considered to be safe (1). But, such serious complications as donor mortality about 1out of 3000 living donor nephrectomies, bleeding, bowel and adjacent organ injuries, pleural and pulmonary complication ocur (8-11). Surgical techniques have changed significantly from open donor nephrectomy, through mini-incision donor nephrectomy, to minimally invasive laparoscopic techniques (1). Advantages or disadvantages of different methods for donor nephrectomy are similar (8). Minimal invasive techniques offer

better postoperative quality of life. The laparoscopic live donor nephrectomy is technically more demanding than the open approach, with prolonged learning curve (1). But, laparoscopic techniques have some disadvantages as fatal complications with higher rate than open techniques (4,11). And also warm ischemic or total ischemic time and operating time are longer than open techniques (8,12). The standard open extraperitoneal or transperitoneal approaches have proved to be a safe approach for donor nephrectomy during the past 50 years (8). It has a low complication rate (8). Most surgeons are more confident and familiar with this approach (8).

In conclusion; we did not have any major complication in our initial series for open donor nephrectomy. Open donor nephrectomy is safe method starting kidney transplantation. But, we are planning to switch off the retroperitonoscopic hand-Assisted donor nephrectomy.

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