



DONOR AND RECIPIENT PROCEDURES

Laparoscopic versus Open Donor Nephrectomy in Germany: Impact on Donor Health-Related Quality of Life and Willingness to Donate

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ABSTRACT

Introduction. Laparoscopic living donor nephrectomy (LDN) offers multiple advantages to the donor. Since 1999 LDN has become the only surgical approach for living kidney donation in our department. To our knowledge a donor health-related quality of life (QoL) has not yet been performed with standardized and validated questionnaires to compare laparoscopic with open nephrectomy. We therefore performed a study with two questionnaires (SF-36/GBB-24) and one set of open questions for all donors in our department.

Methods. Questionnaires were sent out to all donors between 1983 and 2001 with at least a 1-year follow-up. To exclude a bias a maximum response rate was sought; donors who did not answer were recontacted as well as their recipients or their physicians to motivate them for participation.

Results. The response rate was (89.8%). Except for less limb pain in the laparoscopy group, no difference could be detected for donors QoL with respect to the surgical method. Willingness to donate again was not affected by the surgical method. Nevertheless if asked again today, most donors want laparoscopic kidney retrieval.

Conclusions. Donors health-related QoL is not affected by the surgical method when queried retrospectively. Nevertheless, most donors today would favor laparoscopy, if they could chose again. How laparoscopy affects a reluctant donor to step forward must be determined in a prospective study.

DUE TO THE FAVORABLE outcome and the persistent shortage of cadaveric donor organs, living donor kidney transplantation (LDKT) is increasingly performed worldwide. More than half of the kidney transplant donors in the United States are living donors¹ and the share of LDKT in Europe is rising as well.²⁻⁵ Positive aspects of living donation include timely identification of occult medical problems due to the extensive preoperative medical workup and follow-up as well as an increased quality of life (QoL) and self-esteem in addition to a closer relationship with the recipient.⁶⁻¹⁰ Despite their altruistic motives potential kidney donors may refuse the procedure because they fear the associated morbidity. Fueled by the idea to reduce donor obstacles and with knowledge of the advantages of urologic laparoscopy—reduced pain, shorter convalescence—Ratner et al¹¹ in 1994 performed the first

laparoscopic living donor nephrectomy (LDN). Ten years later more than 200 centers worldwide retrieve living donor kidney laparoscopically. More than 60% of the kidneys donated in the United States are procured laparoscopically,

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far more than 10,000 during the last 3 years (based on Organ Procurement and Transplantation Network data as of November 14, 2003). In Europe only a few centers offer LDN as the routine approach.^{2,5} Starting with September 1999 LDN has been our only applied surgical technique for organ retrieval for both kidney sides; our center offers the largest LDN program in Germany.²

LDN has been reported to improve donor QoL in terms of reduced pain, less time in hospital, and shorter period away from work following kidney explantation compared to the open approach.¹² Some authors even report an increase in the number of living donors due to offering LDN.^{13,14} To our knowledge no study has yet been performed with standardized and validated health questionnaires assessing the impact of the surgical technique on donor health-related QoL. Therefore, as part of a QoL study of all living kidney donors in our department, we evaluated the impact of the surgical technique on donor health-related QoL and his or her willingness to donate again if they were in the same situation.

PATIENTS AND METHODS

Approval for the study was obtained from the institutional review board and all participating donors gave informed consent. Kidney retrieval was performed in our department with an open trans- or retroperitoneal access from 1983 to 1999. In February 1999 we started with the non-hand-assisted, transperitoneal laparoscopic donor organ retrieval technique, which has become the sole technique applied for both kidney sides since September 1999. From January 1983 to December 2001, we performed 120 living donor procedures, two of which could not be included in the study for reasons unrelated to organ donation, namely one death from lung cancer 9 years after donation and one donor with extensive neurological deficits after a cerebral stroke 4 years following kidney donation. Twelve donors were lost to follow-up. Of the 106 participating living kidney donors, 62 (58%) had been operated on by the open approach; 25 retroperitoneal and 37 transperitoneal versus 44 (42%) with a laparoscopic approach. Donors were followed either by our nephrological outpatient department or by associated institutions, with which our center constantly exchanged information on donor status. In March 2002, three questionnaires (SF-36, GBB-24, additional questions), accompanied by a personal letter, were sent to all LDKT donors who had at least a 1-year follow-up. If the donor did not return the questionnaires within 4 weeks, we contacted him or her trying to motivate participation and when demanded re-sent the questionnaires. If the donors could not be contacted, we asked the donors primary care provider, the recipient, or the recipient's nephrologist for assistance. Thus, by the end of 2002 we had received answers from all 106 contactable donors.

SF-36 Questionnaire

The SF-36 is an internationally standardized and validated instrument to measure health-related QoL on eight different scales: physical functioning, physical role, bodily pain, general health perception, vitality, social functioning, emotional role, and mental health. Thirty-six questions have to be answered and a score computed for each scale, ranging from 0 (least well-being) to 100 (greatest well-being). First used in the United States, the SF-36 has

undergone reliability testing in Germany as well, where a random sample of 2914 subjects from the general East and West German population served as standard of reference.¹⁵⁻¹⁷

GBB-24 Questionnaire

The standardized and validated GBB-24 (Giessen Subjective Complaints List [Giessener Beschwerdebogen]) assesses psychosomatic reasons for physical complaints for the items cardiac complaints, gastric complaints, limb pain, fatigue tendency, and overall subjective complaints. Findings were compared with gender- and age-specific scores of the German references. To facilitate interpretation, study subjects were assigned to quartiles (Q) for the respective items: Q1 = 0% to 25%, Q2 = 26% to 50%, Q3 = 51% to 75%, Q4 = 76% to 100% reporting fewer complaints than the references. Ranking of a donor in the first quartile (Q1) indicates fewer physical complaints due to psychosomatic reasons than in the reference. Q2 and Q3 are in the range of the normal population with slightly fewer (Q2) or more (Q3) complaints than the controls, while Q4 reflects more physical complaints due to psychosomatic reasons than the normal population.^{18,19}

Additional Questions

Additional questions, referring to the surgical technique experienced by the donor, were developed in cooperation with the participating psychologist (I.H.). They were intended to elucidate the impact of the surgical technique on the donor's current state of health and willingness to donate again. Also, we asked how important the donor would find the surgical technique if he or she could donate again and which of the techniques he or she would prefer if a choice would be possible.

Statistical Analysis

Statistical analysis was performed with commercially available SPSS 11.0. Categorical parameters were compared by chi-square testing. Continuous variables were compared by the Mann-Whitney *U* test. Significant differences between the laparoscopic and open retrieval group were tested in multivariate analysis. A *P* value < .05 was considered significant.

RESULTS

Of 120 living kidney donors two had died due to reasons unrelated to donation. One hundred six of the 118 alive donors participated in the study (89.8%), along with 98% of the laparoscopy group (44/45) and 85% of the open group (62/73; *P* < .05). The mean follow-up for all donors was 75 ± 66 months (range 12 to 226). One hundred five donors completed the SF-36 questionnaire, 104 the GBB-24, and all answered the additional questions. The distribution of the two groups did not differ for gender (laparoscopic: 28 women/16 men vs open: 44 women vs 18 men), for donor age at the time of the study (51.3 vs 53.4 years), for genetic kinship (29 related/15 unrelated vs 47 related/15 unrelated), for donor time spent in the hospital (12.8 vs 18.6 days), for number of severe complications (5 vs 11), or for the number of recipients who died during follow-up (one vs six). Significant differences between the laparoscopy and open group were observed for age at time of donation (laparoscopic: 48.6 vs open: 43.9 years), recipient age (40.0 vs 31.1 years),

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