Right Hepatic Lobe Donation for Living Donor Liver Transplantation: Impact on Donor Quality of Life

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Adult right hepatic lobe living donor liver transplantation (LDLT) has rapidly gained widespread acceptance as an effective procedure for selected patients with end-stage liver disease. However, there are currently no published data on the effect of this procedure on the quality of life of donors. We report the results of a survey of our living liver transplant donors to determine the effect of right hepatic lobe donation on quality of life. We have performed 30 LDLTs since 1997; 24 of these have a follow-up of 4 months or longer. In August 2000, these patients were sent a questionnaire (including a Medical Outcomes Study 36-Item Short-Form Survey) regarding psychosocial outcomes and symptoms after surgery. Major complications occurred in 4 of 24 patients (16%), and minor complications, in 4 of 24 patients (16%). Complete recovery occurred in 75% of patients at a mean time of 3.4 months. Ninety-six percent of patients returned to the same predonation job after a mean time of 2.4 months, and 66% of patients required a period of light-duty work for a mean of 2.8 months before returning to full-duty work. A change in body image was reported in 42% of patients, and 71% reported mild ongoing symptoms (primarily abdominal discomfort) that they related to the donor surgery for which 29% sought evaluation by a physician. The donor's relationship with the recipient was the same or better in 96% of donors, and the relationship with the donor's significant other was the same or better in 88% of donors. Mean out-of-pocket expenses incurred by donors were $3,660. Sixty-three percent of donors reported experiencing more pain than anticipated. All patients would donate again if necessary, and 96% benefited from the donor experience. In conclusion, (1) all our donors are alive and well after donation; (2) almost all donors were able to return to predonation employment status within a few months; (3) most donors have mild persistent abdominal symptoms, and some donors had a change in body image that they attribute to the donor surgery; and (4) this information should be provided to potential donors so they may better understand the impact of donor surgery. (*Liver Transpl 2001;7:485-493.*)

As the shortage of donor organs for liver transplantation has worsened over the past few years, efforts to expand the donor pool have intensified. One of the most effective means to allocate a liver graft to a sick recipient is adult-adult right hepatic lobe living donor liver transplantation (LDLT). Since its introduction to the United States in 1997, LDLT has rapidly gained widespread application. Over the past 3 years at our center, approximately 15% of all liver transplantations at the University of Colorado (Denver, CO) have been performed using a living donor.[1]

Because an increasing number of LDLTs are performed, all aspects of donor outcomes must be measured to determine the impact of donation on the living liver transplant donor. The most important outcome is donor morbidity and mortality. Reports from several centers with active LDLT programs have shown that donor surgery may be performed with minimal complications in the donor.[2-4] Another important aspect of donor outcome is the impact of the donation on the quality of life of the donor. The donor is by definition a healthy person without significant medical problems. Consequently, symptoms or postdonation complications that affect donor quality of life are especially important to record and understand.

We performed a study of the effect of right hepatic lobe donor surgery on donor quality of life. The purpose of this study is 3-fold: (1) to quantify the effect of right hepatic lobe donation on donor quality of life, (2) to make changes in donor management based on these findings to improve donor outcomes, and (3) to inform current and future living liver transplant donors about the realistic impact of LDLT donation on their quality of life.

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Methods

We have performed 30 liver transplantations using the right hepatic lobe from a living donor since 1997. Surgical technique and selection of donors and recipients have previously been reported.[1,5,6] Before donation, the psychosocial evaluation for each donor was performed by 1 social worker (M.T.) and 1 of 3 psychiatrists experienced in the evaluation of liver transplant recipients. In August 2000, all donors with follow-up of 4 months or more (26 donors) were sent a questionnaire regarding the impact of the donor surgery on specific psychosocial aspects of their life and symptoms that could be attributed to the donor surgery (Appendix A). A Medical Outcomes Study 36-Item Short-Form Survey (SF-36) was included as part of the questionnaire.[7] Before receiving the questionnaire, each donor was called to inform him or her to anticipate receipt of a questionnaire. We measured the effect of donation on donor quality of life by recording outcomes in 3 broad areas: (1) perioperative and ongoing symptoms attributed to the donor surgery, (2) the effect of donation on employment and financial status, and (3) changes in body image, activities, and relationships.

Outcomes were classified as medical or psychosocial. Outcomes related to complications and ongoing symptoms were defined as medical outcomes. A major medical complication was defined as a medical problem that required surgical or procedural repair, hospitalization, or intravenous therapy. A minor medical complication was defined as a medical problem that either resolved spontaneously or with oral medical therapy. All other outcomes (employment, financial, body image, activities, and relationships) were categorized as psychosocial. The most important psychosocial outcomes were defined as primary (complete recovery, return to employment, time to return to employment, whether the donor benefited from donation, and whether the donor would donate again). All other psychosocial outcomes were defined as secondary. Results from the donors were tabulated on a Microsoft Excel spreadsheet (Microsoft Corp, Redmond, WA).

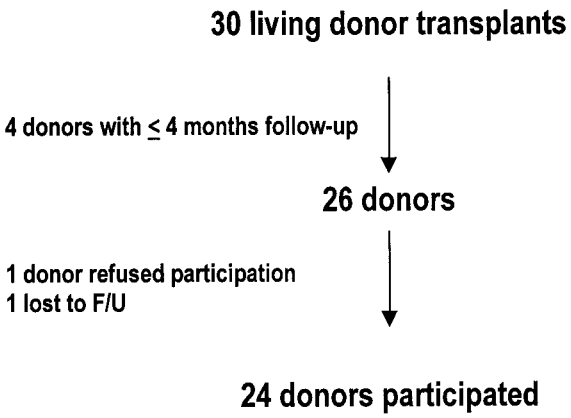

Figure 1. Disposition of donors. (F/U, follow-up.)

Table 1. Donor Demographics

Sex (men/women)	14/10 (58/42)
Age (yr)	33.2 ± 11.5 (31)
Follow-up (mo)	13.7 ± 8.8 (13)
Length of stay (d)	6.3 ± 1.5 (6)
Relationship to recipient	
Offspring	11
Sibling	7
Parent	1
Spouse	2
Friend	1
Daughter-in-law	1
Nephew	1
Race	
White	17 (71%)
Hispanic	5 (21)
Asian	2 (8%)

NOTE. Values expressed as number (percent) or mean ± SD (median).

Results

The disposition of the donors is shown in Figure 1, and donor demographics are listed in Table 1. The mean age of the donors was 33.2 ± 11.5 years, mean length of follow-up was 13.7 ± 8.8 months, and mean length of stay for the donor surgery was 6.3 ± 1.5 days. Most donors (14 of 24 donors; 58%) were men, and the majority were recipient offspring (sons or daughters; 11 of 24 donors; 46%) or siblings (7 of 24 donors; 29%).

Medical outcomes are listed in Table 2. All 24 donors survived the surgery. Four patients had major complications, including 2 patients with bile leaks. One bile leak occurred 3 days after donor surgery and required operative repair. The second bile leak occurred at 4 weeks after surgery and resolved with percutaneous drainage after 2 months. One patient underwent a reoperation to retrieve a Jackson-Pratt drain, and another patient had an incisional hernia repair 2 years after donation. Minor medical complications developed in 4 patients. Two patients had gastrointestinal ulceration diagnosed by esophagogastroscopy within 2 months of donation. Ulcerations in both patients were diagnosed after upper endoscopy for abdominal pain and were treated with an oral proton pump inhibitor for 3 months, with resolution of symptoms. Neither patient had intestinal bleeding. One patient developed altered mental status for 24 hours immediately after donation that was attributed to encephalopathy or medication reaction. This resolved spontaneously without sequelae. One patient had transient neuropraxia attributed to intraoperative positioning of the left arm that resolved

Table 2. Donor Medical Outcomes

Survival	24/24 (100)
Complications	
Major	4/24 (16)
Bile leak	2
Reoperation, drain retrieval	1
Incisional hernia repair	1
Minor	4/24 (16)
Gastrointestinal ulcer	2
Encephalopathy	1
Transient neuropraxia	1
Ongoing medical treatment	
Yes	1 (4)
No	23 (96)
Ongoing symptoms	
Yes	17 (71)
No	7 (29)
Abdominal discomfort	12
Scar numbness	2
Loss of appetite, nausea	2
Trouble concentrating	1
Poor appetite	1
Weakness	4
Diarrhea	1
Nausea	1
Back pain	1
Difficulty sleeping	1
Sought other physician assistance	
Yes	7 (29)
No	17 (71)

NOTE. Values expressed as number (percentage of donors responding to corresponding questions in the questionnaire in Appendix A). Major and minor complications are defined in Methods. Under ongoing symptoms, the number of symptoms reported is greater than 24 because some patients reported > 1 symptom.

spontaneously after 48 hours. At the time of the survey, ongoing medical therapy (oral proton pump inhibitor) was required in 1 patient with gastrointestinal ulceration (noted previously).

Ongoing symptoms at the time of the survey were reported in 17 patients (71%). (The total number of symptoms reported is greater than 17 because some patients reported more than 1 symptom.) Specific symptoms reported are listed in Table 2. These symptoms led 7 patients to seek medical evaluations by physicians not on the transplant team. We have an open-access policy for donors to be evaluated by physicians on the transplant team for problems occurring at any time after donation. However, all these cases were patients who lived far away from our transplant center and developed symptoms after they returned home. These evaluations failed to show an organic cause for the reported symptoms other than the donor hepatectomy.

Primary psychosocial outcomes are listed in Table 3. Patients were asked whether they had "completely recovered" from the donor surgery. Eighteen patients (75%) reported full recovery at a mean time of 3.4 months. Six patients (25%) did not believe they had completely recovered from surgery, although they had returned to their preoperative employment. In the patients who did not report "100% recovery," the average level of recovery reported was 82%. Twenty-three patients (96%) were able to return to their predonation job after a mean recovery time of 2.4 ± 1.2 months. One patient (4%) elected to quit his job in the military after donation and return to school. Ninety-six percent of the donors believed they had benefited from donation, and all reported that they would donate again if required. Some of the donor comments regarding how they benefited from donation are listed in Appendix B.

Secondary psychosocial outcomes are listed in Table 4. Light duty (defined as return to employment without full predonation duties or time) was necessary in 16 patients (66%) for a mean time of 2.8 months. Ten patients (42%) reported a change in body image after donor surgery. Three patients reported numbness around the hepatectomy scar; 4 patients, bulging in the abdomen related to the incision; 2 patients, postoperative weight gain; and 1 patient, a change in body image without further specification. Ninety-six percent of the donors reported that their relationship with the recipient was the same or better after donor surgery. Eighty-eight percent of donors found that their relationship with their significant other was the same or better after donation. None reported impairment in sexual func-

Table 3. Primary Psychosocial Outcomes

Complete recovery	
Yes	18 (75)
No	6 (25)
Mean time to complete recovery (mo)	3.4
Return to same job	
Yes	23 (96)
No	1 (4)
Mean time to return to work (mo)	2.4 ± 1.2
Benefited from donation	
Yes	23 (96)
No	1 (4)
Donate again	
Yes	24 (100)
No	0

NOTE. Values expressed as number (percentage of patients responding to corresponding questions in Appendix A questionnaire).

Table 4. Secondary Psychosocial Outcomes

Employment	
Light duty	
Yes	16 (67)
No	8 (33)
Mean time of light duty (mo)	2.8 ± 3.4
Body image	
Change in body image	
No	14 (58)
Yes	10 (42)
Scar	3
Abdominal bulge	4
Weight gain	2
No response	1
Relationship	
To recipient	
Better	10 (42)
Same	13 (54)
Worse	1 (4)
To significant other	
Better	3 (13)
Same	18 (75)
Worse	3 (13)
Impairment in sexual function	
No	24 (100)
Yes	0
Cannot perform activity	
No	13 (54)
Yes	11 (46)
Drink alcohol	1
Athleticism/physical exertion	9
Short-term memory loss	1

NOTE. Values expressed as number (percentage of donors responding to corresponding questions in Appendix A questionnaire).

tion. Eleven patients (46%) stated that they did not believe they could perform specific activities after donation. These included 1 patient who was afraid to drink alcohol, 9 patients who reported decreased ability to perform strenuous physical exertion, and 1 patient with short-term memory problems.

The financial impact incurred by the donor and mechanisms used for financial assistance during evaluation, donation, and recovery are listed in Table 5. Although all medical expenses related to donation are paid by the graft recipient's insurance, all our donors incurred incidental expenses, including transportation to and from the transplant center, lodging, incidental medications, and wages lost during the donation process. The mean total financial burden of all incidental expenses related to donation was $3,660. Many patients reported acquiring financial assistance from 1 or several sources. These included short-term disability/sick leave (5 patients), long-term disability (1 patient), leave without pay (7 patients), leave with full salary (7 patients), and financial help from family and friends (12 patients). (The total number of sources is greater than 24 because some patients reported assistance from more than 1 source.)

The donors were asked about issues of coercion, perioperative pain, and effect of donation on their overall health (data not shown). None of the 24 donors (0%) felt pressure from the medical team to donate. Two donors (8%) expressed that they received some degree of family pressure to donate. Regarding postoperative pain, 15 patients (63%) experienced more pain than they had anticipated, 4 patients (16%) experienced the same amount of pain as anticipated, and 4 patients (16%) experienced less pain than anticipated. (One patient did not respond to this question.) Six patients (25%) responded "yes" when asked whether they thought that the donation was harmful to their health, 2 patients (8%) were unsure, and 16 patients (66%) responded "no."

Results of the SF-36 survey are shown in Figure 2. Compared with the general US population, overall scores on the SF-36 were not significantly different in the following domains: Role–Physical, Bodily Pain, General Health, Vitality, and Role–Emotional. Scores were significantly better for donors versus the US population in the following areas: Physical Functioning (92.5 *v* 84.5), Social Functioning (91.2 *v* 83.6),

Table 5. Financial Outcomes

Financial assistance required for donation	
Short-term disability/sick leave	5
Long-term disability	1
Leave without pay	7
Leave with full salary	7
Financial help friends/family	12
Mean financial expenses incurred by donor ($)	
Transportation	532
Lodging	202
Medication	67
Lost wages	2662
Other	197
Total	3660

NOTE. The number of donors responding to corresponding questions in the questionnaire in Appendix A. Mean financial expenses incurred by the donors are shown. Under "Financial assistance required for donation," the total number of sources of assistance is greater than the number of patients because some patients reported more than 1 source of financial assistance.

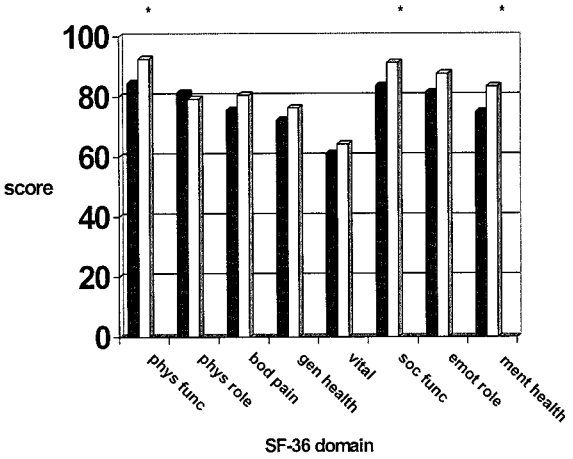

Figure 2. SF-36 scores in living donors (□) and the US population (■) for the 8 domains in the SF-36 survey. (Phys func, Physical Functioning; phys role, Role–Physical; bod pain, Bodily Pain; gen health, General Health; vital, Vitality; soc func, Social Functioning; emot role, Role–Emotional; ment health, Mental Health.) *Donor score is significantly higher for Physical Functioning, Social Functioning, and Mental Health than the US population, $P < .05$.

and Mental Health (83.3 *v* 74.8), respectively ($P < .05$).

Discussion

Overall, our donors reported a positive experience. All our donors are alive and well. All donors reported that they would donate again, and almost all believed they had benefited from the donation. All donors were able to return to the same job a few months after donation, but 1 patient elected to quit his job and enter school.

Although our donors have undergone successful donor surgery, we were surprised at some of the findings in our survey. More than two thirds of donors reported mild ongoing symptoms that they attributed to the donor hepatectomy. Although these symptoms were medically trivial in that none of the evaluations discovered an identifiable organic problem, the donors found them bothersome enough to record in the survey. All patients with mild ongoing symptoms reported a "complete" recovery and had returned to full employment. The most likely explanation for these symptoms is the effect of right hepatectomy. These symptoms may be present in patients undergoing right hepatectomy for life-threatening indications, such as hepatoma or hemangioma. Mild postoperative pain in these patients may be overlooked because the surgery was medically required. In addition, many patients with hepatic masses have associated abdominal pain, and surgical removal of the mass may relieve the discomfort. As a result, minor postoperative pain may be an improvement from the preoperative condition. Conversely, the patients undergoing donor hepatectomy were otherwise healthy without abdominal symptoms before donation. Consequently, minor postoperative discomfort may be more noticeable. These symptoms will need to be followed up and quantified in these donors over the ensuing years to determine whether the character or severity changes over time.

Another unexpected finding was that nearly two thirds of donors experienced more pain than they had anticipated in the immediate postoperative period. We noticed that the immediate postoperative pain experienced by the donors was greater in most cases than the pain experienced by the transplant recipient. This may have been caused in part by the beneficial effects of perioperative corticosteroids administered to the transplant recipients. In addition, the pain may be accentuated in our donors because they are otherwise healthy and rarely, if ever, had undergone medical procedures or surgery. Alternatively, our preoperative explanation of the anticipated postoperative pain may have been inadequate. Based on these findings, we have intensified our preoperative donor training (discussed later).

We also had not anticipated the financial expense incurred by most of the donors. Although the cost of the medical care is paid for entirely by the transplant recipient's insurance, mean out-of-pocket expenses (including lost wages) incurred by our donors were more than $3,000. Many donors may be able to absorb this cost without difficulty. However, the relatively high incidental costs associated with donation may be a substantial burden for some potential donors with limited financial resources. This is especially true for donors who live far from the transplant center because of the high cost of travel and extended lodging associated with the evaluation and donation.

Two of our patients (8%) developed gastrointestinal ulceration within 2 months of the donor surgery. Three other groups have observed similar findings in living liver transplant donors. However, most of the donors had left lobectomy or lateral segmentectomy for pediatric recipients. Ohkohchi et al[8] reported that 2 of 25 of their donors (4%) who underwent either lateral segmentectomy or left lobectomy developed duodenal ulceration.[8] Two of 41 donor surgeries (5%) were complicated by gastroduodenal ulceration in the series reported by Tojimbara et al.[9] In addition, Renz has observed this complication in 11% of their donors (Dr J. Renz, personal communication, December 2000).

In addition to mild ongoing abdominal symptoms, some donors noted increased difficulty with strenuous activities after donation. However, all donors have returned to their predonation activities. Many of our donors reporting symptoms currently participate in jobs and/or activities that require a high level of physical exertion. These include a highway patrolman on full-time patrol duty, major city paramedic, rodeo rider, volleyball sportsman, intramural football player, construction laborer, and prison boot camp drill sergeant. Consequently, none of the reported symptoms in any donor is debilitating.

The findings of the SF-36 survey were expected. The findings of significantly higher scores in Physical Functioning, Social Functioning, and Mental Health likely reflect the presumed higher functional level of our donors. In addition, the selection process for donation excluded patients with underlying physical or psychiatric problems. Consequently, one would predict higher scores in the SF-36 domains compared with the general population.

There are very few existing data on the effect of living liver transplant donation on the quality of life for the donor. Almost all reports are of medical morbidity and mortality in parent-child left hepatic lobe donation for pediatric recipients. Morimoto et al[10] analyzed responses to a questionnaire administered to 112 living liver transplant donors who donated at their institution between 1990 and 1994 for pediatric recipients. Sixty-seven patients responded, and of these, 48 donors (72%) had "resumed life as usual within 3 months" of the donation. There were no "severe postoperative" long-term symptoms. Yamaoka et al[11] reported results in 100 parental donors who donated between 1992 and 1994. Of the 100 donors, 62 donors who were 6 months or more postdonation were questioned regarding their quality of life. The investigators reported that "two-thirds of donors have no complaints, although others have some."

Based on information gained from this survey, we changed several aspects of donor management. First, as noted, many of our donors reported more pain after donation than anticipated. In response to this, we changed our preoperative donor teaching. Each donor has a preoperative session with 1 transplant coordinator who describes the routine postoperative course. In this session, the donor is given a detailed description (including pictures) and explanation of the peritoneal drains, urinary catheter, and nasogastric tube required after surgery. All our potential donors are invited to meet a donor who has previously undergone a donor right hepatectomy. We encourage the experienced donor to frankly describe their postoperative course to the potential donor. We attempt to match the potential donor with a donor of the same age, race, and life station. If possible, we have the potential donor visit a donor who is hospitalized immediately after the donor surgery so that the potential donor can better understand the postoperative course. In addition, we rarely place the donor and recipient in the same room postoperatively. Because recipients typically have much less postoperative pain than the donor, lodging the donor and recipient in the same room after surgery highlighted the increased pain in the donor.

Second, some of our early donors were concerned that the recipient received more attention after the surgery. These donors expressed the need to have a specific individual on the transplant team available to address their postoperative issues. As a result, we have assigned a specific nurse to call each donor weekly after the donation until the donor has fully recovered to ensure that postoperative concerns of the donor are fully addressed.

Third, as described, we (and other centers) have noted a small incidence of gastrointestinal ulceration after donor surgery. As a result, we have placed all our donors on prophylactic oral proton pump inhibitor treatment immediately after surgery and for the following 2 months.

Finally, the detailed findings of this survey are conveyed to each potential donor during their preoperative donor evaluation so that they may be fully informed regarding the outcomes of right hepatic lobe donation.

There were several limitations to our study. Despite persistent efforts on the part of our team, 1 donor refused to participate in the study. He and his family were grieving the loss of their family member who had died 14 months after transplantation. Based on our interactions with this donor, we believe that he likely would have expressed negative views regarding his donor experience, and exclusion of this patient may have altered our results slightly. (The donor for the only other transplant recipient who died reported a very positive donor experience and has remained an active advocate of our living donor program.) In addition, we were unable to locate 1 donor who donated more than 2 years ago. The questionnaires were completed at different postoperative intervals (range, 4 to 37 months). This disparity could impact on the reported symptoms related to surgery. In addition, the questionnaires were not blinded. This may have compelled some donors to report only positive responses. Donor candidates did not complete an SF-36 survey before donation. As a result, we have no predonation comparison data. Be-

cause our donors are a highly selected population, their SF-36 data may reflect a healthier, more functional cohort than the general US population. Currently, each potential donor performs an SF-36 survey as part of their predonation donor evaluation for comparison with postdonation data. With regard to reported symptoms, we also did not survey our donors before donation. As a result, some of these symptoms may have been present before the surgery. Currently, we are performing a preoperative survey of symptoms so that in the future, we can better attribute postoperative symptoms directly to the donor surgery. We plan to continue our follow-up of these donors and future living donors of liver transplants to determine the long-term effects of donation on the donor. We are gathering the following data on all of our donors at yearly intervals: liver function test results, medical problems, subsequent surgeries, and psychosocial outcomes.

Based on our clinical experience with LDLT over the past 3 years and review of the data presented here, all members of our transplant team are very enthusiastic about LDLT. We believe this procedure is a remarkably effective life-saving procedure for selected patients with end-stage liver disease. In our living liver donor transplant recipients, we have observed dramatic clinical improvement after transplantation. Almost all our donors have been followed up to a full recovery and have returned to normal activities after donation with minimal problems. With an expert surgical team and proper selection of recipients and donors, the benefits to the recipient vastly outweigh the risks to the donor. With this experience, we plan to continue careful evaluation of our donors and recipients and anticipate rapid growth in the number of LDLTs performed at our center in the upcoming years. However, LDLT is not without complications and risks to the donor. One would anticipate that a normal person could not undergo removal of the right hepatic lobe without some postoperative symptoms. We believe that all potential living liver transplant donors should be advised of the recognized risks of the surgery, including the impact of donation on their posttransplantation quality of life.

In summary, LDLT is an effective procedure for selected patients with end-stage liver disease. All our donors are alive and well, and almost all donors believe though they benefited from the surgery and would choose to donate again. However, many donors report mild medical and psychological symptoms that they attribute to the donor surgery. This experience should be related to potential living liver transplant donors to assist them in their decision to donate.

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Appendix A: Donor Questionnaire

Live Liver Donor Supplemental Questionnaire
NAME: _____MRN:_____ DATE:_____
DATE OF SURGERY: _____ TIME SINCE SURGERY:_____

1) How long following surgery did it take for you to make a "complete recovery," where you were able to return to your entire regular activities and lifestyle that you did prior to surgery?
   - Less than one month _____
   - 1 to 3 months _____
   - 3 to 6 months _____
   - 6 months or more _____

   a) If you have not yet made a "complete recovery" what percentage would you rate yourself as being close to making a complete recovery?
      - 0 to 25% _____
      - 25 to 50% _____
      - 50 to 75% _____
      - 75 to 100% (100% would indicate complete recovery) _____

2) Occupation before surgery. _____, Student: (Circle one) FT PT
   Are you back at the same job? YES NO
   Were there any modifications or accommodations made to the position for you to complete all your prior duties? YES NO
   If you answered yes, list all modifications that were made.
   How long did it take before you returned to your job? _____
   Did you require a period of "light duty" before returning to work? YES NO
   If you answered yes, how long did you remain in "light duty" status? _____

3) During your absence from work was any of the following financial support available to you? (Circle one)
   - Sick leave YES NO
   - Short-term disability YES NO
   - Long-term disability YES NO
   - Full salary (paid by employer) YES NO
   - Leave without pay YES NO
   - Financial assistance from family/friends YES NO
   - Savings/self YES NO

   How much money did you spend for out of pocket expenses? _____
   Please itemize the following costs paid by you and/or your family. (This includes all expenses incurred during the evaluation.)
   - Transportation (this should include parking.) _____
   - Lodging _____
   - Medication _____
   - Lost wages _____
   - Other expenses _____

4) Please describe any ongoing medical issues you feel are related to the surgery (this includes any pain or discomfort). _____
   a) Have you consulted with another physician outside the transplant team for any of these issues? If you answered yes, what were the results?_____
5) Has this surgery affected any of the following areas? (Circle one)
   - Body image YES NO
   - Relationships with recipient YES NO
   - Relationships with significant other YES NO
   - Sexual functions YES NO

   If you answered yes to any of the above questions, please describe. _____
6) Are there any activities (mental or physical) that you were able to do before surgery that you are no longer able to participate in or participate as well. _____
   Do you feel that you have benefited in any way from being a live donor? _____
   a) Are there any activities (mental or physical) that you can do better after surgery? _____
8) Please answer yes or no to the following questions. (Circle one)
   - Do you think this experience has been harmful to your health? YES NO
   - Did you receive any pressure to donate from the medical team? YES NO
   - Did you receive any pressure to donate from your family? YES NO
   - Knowing what you know now, would you do this again if possible? YES NO

   Please comment on any questions you answered yes to. _____
9) Do you have any suggestions or comments to make to the transplant team regarding presurgery experience, the hospitalization, or the follow-up period?_____
10) Was the "pain and suffering" that you experienced as a result of the donation more, less, or about what you had anticipated before surgery? _____
11) Please write any comments or suggestions you may have regarding this survey. _____
12) Would you like for a member of the transplant team to contact you regarding any of your answers on this survey? (Circle one) YES NO
13) Would you be willing to speak with someone who may be considering donating part of his or her liver to a friend or loved one? YES NO
    If so what is the phone number you wish to be contacted at?_____

When is the best time to contact you? _____E-mail address: _____

A member of the transplant team will inform you ahead of time if a candidate may try to reach you.

Appendix B: Donor Comments About Their Experience

Responses to question no. 6: "Do you feel that you have benefited in any way from being a live donor?"
"I gave life back to another person. What could be better than that?"
"I had the chance to save my own mother's life and succeeded in doing so."
"I feel great about myself for being able to donate my liver to my mother. I have also learned more about my body since the surgery."
"Life has more meaning. I feel I've grown spiritually. I am doing more things. I have more fun in life."
"My outlook on life has changed—it is more positive and my relationship with the recipient (spouse) gets better and better."
"This experience put things into perspective for me. Things like my grade point average and how I do on a test aren't as important to me."
"It has been a pivotal event in my life. I have benefited in my personal, spiritual, emotional and physical development. I have more patience now and cope with stress better."