

Graft and Quality of Life Outcomes in Older Recipients of a Kidney Transplant

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Background: It is well recognized that kidney transplants significantly improve quality of life for patients with end-stage renal disease (ESRD). This benefit is not as clearly documented for older recipients as it is for younger recipients. We looked at outcomes, both medical and psychosocial, in a group of older (≥ 65 years) kidney transplant recipients and compared the results to a group of younger recipients (18 to 64 years).

Methods: From 1990 through 2002, we performed 2,746 kidney transplants at our center: 2,596 (94.5%) in recipients 18 to 64 years old and 150 (5.5%) in recipients 65 years or older. In our retrospective analysis, we determined outcomes such as patient and graft survival rates. To determine whether or not older recipients had an improved health-related quality of life, we used the national SF-36 (short form) questionnaire. We compared those results with a group of younger recipients and with national age-appropriate norms.

Results: The mean recipient age was 69.1 years in the older group vs. 42.8 years in the younger group ($p < 0.001$). Living donors were used in 43.3% of the transplants in the older group vs. 47.5% in the younger group ($p < 0.01$). At 5 years posttransplant, patient and graft survival rates were 73% and 68% in the older group vs. 86% and 79% in the younger group ($p < 0.001$).

We analyzed the SF-36 responses for all recipients with completed forms: 42 completed forms from the older group vs. 149 from the younger group. The overall benefit to quality of life was similar for both groups. General physical health was rated slightly higher than national norms in both groups. Benefits to mental health were more pronounced in the older group.

Conclusion: Kidney transplants can be performed in older recipients with acceptable outcomes. Such recipients enjoy significant benefits to their quality of life after a transplant, similar to benefits seen in younger recipients. Older age, by itself, should not be a contraindication to a transplant.

Keywords: *Kidney transplants, Older recipients, Quality of life*

A kidney transplant has become the treatment of choice for most patients with end-stage renal disease (ESRD). Even in very young recipients, such as infants, a transplant is often a better option than dialysis [1]. However, some concern remains about performing such transplants in older patients with ESRD. Such patients often have multiple comorbid conditions that may place them at high risk for any operative procedure. But as transplant techniques and anesthetic management have improved, more older patients are being considered as potential recipients for a kidney transplant. Studying transplant outcomes in this group of patients will be increasingly important as more and more older patients become dialysis-dependent.

Graft outcomes are always important to determine, but the patient's quality of life is increasingly being recognized as a key measure of outcome posttransplant. Quality of life is especially important for kidney

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recipients, because a primary aspect of a kidney transplant is to enhance quality of life. It is well established that a kidney transplant improves the quality of life for patients with ESRD [2]. However, this improvement has not been as clearly documented for older recipients as it has been for younger recipients [3-5]. Graft survival has improved tremendously as immunosuppression has improved, but graft survival by itself is not a very good measure of a patient's social or psychological well-being [6,7].

A good way to measure quality of life is to administer the nationally standardized SF-36 (i.e. 36-item short form) questionnaire [8]. The SF-36 consists of eight scales: physical functioning (PF), role limitation due to physical health problems (RP), bodily pain (BP), social functioning (SF), mental health (MH), role limitation due to emotional problems (RE), overall vitality (VT), and general health perception (GH). The SF-36 is considered reliable and is used worldwide [9].

Materials and Methods

We analyzed the results of all adult kidney transplants performed at the University of Minnesota from 1990 through 2002 according to 2 recipient age groups: 18 to 64 years and ≥ 65 years.

Our operative techniques and immunosuppressive protocols for kidney transplants have been detailed previously [10]. Immunosuppression usually involved a polyclonal antibody preparation for 5 to 7 days, a calcineurin inhibitor (cyclosporine or tacrolimus), an antimetabolite (azathioprine, mycophenolate mofetil, or sirolimus), and prednisone. For the last 3 years, we have routinely used a steroid avoidance regimen, discontinuing all steroids by the end of the first post-transplant week. Acute rejection episodes were suspected by a rise in the serum creatinine level, confirmed with a percutaneous biopsy, and treated initially with high-dose steroid therapy. Steroid-resistant episodes were treated with a polyclonal preparation.

Data Analysis: We obtained data on recipients from chart reviews and a database management program (DataEase-Software Solution). Rejection, graft survival, and patient survival rates were estimated using Kaplan-Meier methods. Results were compared between the 2 groups using a generalized Wilcoxon test. A p value of <0.05 was considered significant.

Quality of Life Assessment (SF-36): A total of 191 recipients with completed forms were included in the

analysis: 149 in the younger group (18 to 64 years) and 42 in the older group (≥ 65 years). Recipients were sent the SF-36 at 1 year posttransplant. Each completed form generated a mean score for each of 8 categories (the higher the score, the more favorable the quality of life). We then used a two-tailed t-test, looking at recipients together as well as by age group, to analyze the difference in the mean values between all 191 recipients and their respective national norm. A p value of <0.05 was considered significant.

Results

From 1990 through 2002, we performed 2,746 kidney transplants at our center: 2,596 (94.5%) in recipients 18 to 64 years old, and 150 (5.5%) in recipients ≥ 65 years old. The mean recipient age in the older group was 69.1 years vs. 42.8 years in the younger group ($p < 0.001$). Characteristics of the 2 groups are shown in Table 1. The older group had a higher proportion of male patients, a lower proportion of diabetic patients, a slightly higher mean donor age, and a greater percentage of cadaver transplants.

Graft outcomes for the 2 groups are shown in Table 2. Results were superior in the younger group, but patient and graft survival rates in the older group at 5 years posttransplant were each close to 70%. The lower graft survival rate in the older group was due to

Table 1. Characteristics of younger and older kidney recipients

Recipient age	18 to 64 years	≥ 65 years
Total n	2,596	150
Mean donor age (years)	37.8	41.8
Mean recipient age (years)	42.8	69.1
Male recipients	59.6 %	65.3 %
Retransplants	19.1 %	5.3 %
Diabetic recipients	49 %	16 %

Table 2. Outcomes for younger and older kidney recipients

Recipient age	18 to 64 years	≥ 65 years	p value
Patient Survival			
1 year	95 %	86 %	$p < 0.01$
5 year	87 %	73 %	
Graft survival			
1 year	90 %	82 %	$p < 0.01$
5 year	79 %	68 %	
Graft survival (death-censored)			
1 year	94 %	93 %	$p = 0.81$
5 year	87 %	87 %	
Acute rejection			
6 months	24 %	8 %	$p < 0.01$
1 year	26 %	11 %	
Chronic rejection			
1 year	5 %	2 %	$p = 0.08$
5 year	14 %	10 %	

Table 3. Causes of graft loss for younger and older recipients

Recipient age	18 to 64 years	≥ 65 years
Death with function	13.2%	26.7%
Chronic rejection	7.9%	4.0%
Acute rejection	1.7%	2.0%
Discontinuation of medications	1.7%	0%
Technical complications	1.8%	0%
Recurrent disease	0.8%	0.7%
Other	4.0%	5.3%
Grafts still functioning	68.9%	61.3%

a higher incidence of recipient deaths. When death-censored graft survival was compared between the 2 groups, no difference was noted.

Of the 150 older recipients, 53 (35.3%) have died since their transplant. The most common causes of death were cardiovascular conditions (23%), infections (21%), cerebrovascular conditions (11%), and malignancy (13%). By far, the most common cause of graft loss in the older group was death with function (70%). Other causes of graft loss included chronic rejection (10%), acute rejection (3%), and recurrence of disease (2%) (Table 3). Of note, no grafts were lost in the older group because of technical causes, and no cases of renal artery or renal vein thrombosis were seen. The most common surgical complication in the older group was a superficial wound infection (16%). Other complications included urine leak (6.7%), ureteric stricture (5.3%), and a deep abscess (8.0%). As shown in Figure 1, the incidence of acute rejection was significantly lower in the older group ($p < 0.01$) vs. the younger group.

The SF-36 results for the 2 groups are presented in Figures 2-4. Also included are the national norms for similar age groups. The younger group demonstrated better results with regard to bodily pain (BP), overall

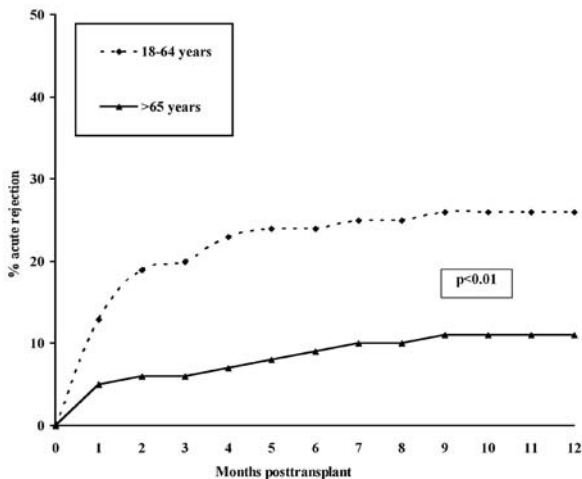


Figure 1. Incidence of acute rejection for older vs. younger recipients recipients.

vitality (VT), social functioning (SF), and mental health (MH) as compared with the national norms (Figure 2). The older group scored higher in their general health perception (GH), social functioning (SF), and mental health (MH) as compared with the national norms (Figure 3). When we compared scores between our 2 groups (Figure 4), we found that the older group scored higher with regard to social functioning and mental health.

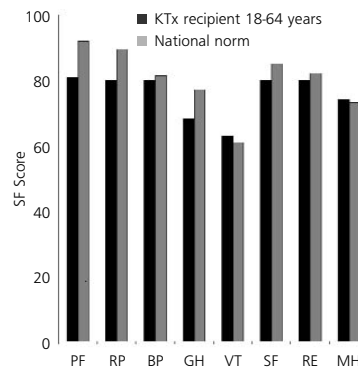


Figure 2. SF-36 scores for younger recipients vs. age-appropriate national norms (PF= physical functioning, RP= limitation due to physical role health problem, BP= bodily pain, SF= social functioning, MH= mental health, RE= limitation due to emotional role problems, VT= overall vitality, GH= general health perception).

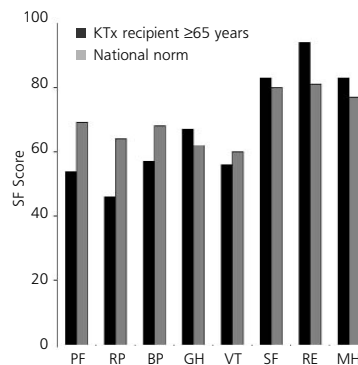


Figure 3. SF-36 scores for older recipients vs. age-appropriate national norms.

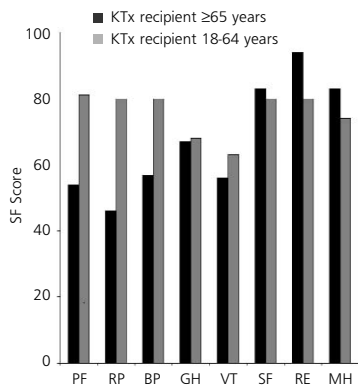


Figure 4. SF-36 scores for older vs. younger recipients.

Discussion

The number of older patients with ESRD continues to rise at a dramatic rate. A kidney transplant is a better option than dialysis for the vast majority of patients, resulting in improved survival rates and better quality of life. Yet some transplant centers remain reluctant to accept older patients, given their higher likelihood of comorbid conditions and higher mortality rates post-transplant. Our center's philosophy has been to not consider older age by itself as an exclusion criterion for transplant. Although older (vs. younger) patients have a higher mortality rate posttransplant, dialysis is not an attractive alternative. Older patients have a high mortality risk from dialysis, significantly higher than for younger dialysis patients. Older (vs. younger) patients also have a much higher mortality risk on the kidney transplant waiting list.

Therefore, if there are no obvious contraindications, older patients should receive a transplant sooner rather than later. Several methods have been introduced in an attempt to achieve this goal. At our center, we have tried to use the living donor option for older patients if at all possible. In Europe, the establishment of the Eurotransplant Senior Program (ESP) preferentially allocates older donor kidneys to older recipients; the result has been significantly lower waiting times for these older patients, without compromising outcomes [11].

Studies of outcomes in older patients are necessary to validate the philosophy of timely transplants. In our current study, we found acceptable graft and patient survival rates for older recipients. Mortality in our older recipients was usually secondary to a cardiovascular condition or to infection. This finding emphasizes the importance of thorough screening for cardiovascular disease pretransplant, and of appropriate interventions (e.g., coronary artery bypass grafting or angioplasty) for any identified abnormalities. Posttransplant, older recipients generally have a lower incidence of acute rejection and are felt to be at lower immunologic risk. Thus, immunosuppressive therapy should be tailored to control infections.

Besides the obvious graft outcomes, quality of life is also crucial to determine. Our SF-36 results were consistent with other national studies that have evaluated the quality of life gains in young kidney recipients [12]. We also demonstrated a benefit to older recipients with

regard to overall general health and social functioning, with a pronounced benefit in mental health as compared with the national norms. Mental health is a compelling issue for older patients. In our study, in both age groups, general physical health was rated slightly higher than national norms. The older group had only modest gains in relief of bodily pain, but older patients often have pain from multiple sources. Overall, compared with the national norms as well as with the results of our younger group, our older group enjoyed significant benefits in quality of life after a successful kidney transplant.

In conclusion, older recipients (≥ 65 years) can enjoy significant benefits in quality of life after a kidney transplant, similar to the benefits seen in younger recipients. Older age by itself should not be a contraindication to a transplant.

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