Comprehensive Assessment of Quality of Life and Psychosocial Adjustment in Patients With Renal Tumors Undergoing Open, Laparoscopic and Nephron Sparing Surgery

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Abbreviations and Acronyms

CARES-SF = Cancer Rehabilitation Evaluation System-Short Form

GFR = glomerular filtration rate

IES = Impact of Event Scale

LP = laparoscopic partial nephrectomy

LR = laparoscopic radical nephrectomy

MCS = Mental Component Summary

OP = partial open nephrectomy

OR = radical open nephrectomy

PCS = Physical Component Summary

QOL = quality of life

RCC = renal cell carcinoma

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Purpose: We prospectively evaluated the general and cancer specific quality of life, and psychosocial adjustment of patients with a renal mass treated with radical vs partial nephrectomy via a laparoscopic or an open approach.

Materials and Methods: A total of 172 patients with renal tumors completed questionnaires before surgery, and 3 weeks, and 2, 3, 6 and 12 months postoperatively. We assessed general quality of life using SF-36™ and cancer specific quality of life using the Cancer Rehabilitation Evaluation System-Short Form, in addition to intrusive thoughts, avoidance behaviors and fear of recurrence. We used mixed model regression analysis to compare these measures across surgery types during the study course, adjusted for tumor size, histology, stage and renal function.

Results: The SF-36 physical component score differed significantly by surgery type with time ($p = 0.04$). Patients treated with laparoscopy improved by month 2 while those treated with open surgery had poorer quality of life until month 3. Better cancer specific quality of life was reported in patients who underwent radical vs partial nephrectomy. Age also had a significant effect on outcomes.

Conclusions: We report one of the most comprehensive patient reported prospective quality of life studies in patients with renal cell carcinoma. There were significant differences in quality of life and psychosocial adjustment outcomes during 1 year among patients treated with 1 of 4 commonly accepted surgical renal procedures. These outcomes must be evaluated in the context of tumor characteristics, cancer specific outcomes and renal function. These quality of life issues may be important to consider when choosing surgical procedures for patients with renal tumors.

Key Words: kidney; carcinoma, renal cell; quality of life; questionnaires; psychology

HEALTH related QOL is an increasingly important factor to consider when examining the benefits of different cancer treatments. QOL has an important role in the decision making process and in the ultimate acceptability of particular treatments.[1] This is especially true for patients for whom there may be multiple surgical treatment options, such as a renal mass presumed to be RCC. Options frequently include radical nephrectomy (removing the entire kidney) or partial nephrectomy. Multiple studies show that long-term recurrence-free survival for patients with early stage

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disease is favorable with partial nephrectomy and recent American Urological Association guidelines recommend partial nephrectomy when possible.[2]

However, there is little published data comparing the QOL outcomes of patients who undergo these surgeries. Most studies have been retrospective and show conflicting results. For example, a retrospective study comparing postoperative QOL indicated patients who underwent radical nephrectomy had significantly higher scores on physical functioning than those who underwent partial nephrectomy but they did not differ significantly on other QOL domains.[3] Another retrospective study showed no significant difference in overall QOL between treatment groups, although patients with more renal parenchyma had greater physical health, and lower intrusion and avoidance scores.[4] More recent prospective studies of radical vs partial nephrectomy revealed little difference in QOL.[5,6]

Adding to the complexity of early stage kidney cancer is that radical or partial nephrectomy can be done laparoscopically or via an open procedure. A review of LP vs OP showed that the mid-term oncological and functional outcomes of laparoscopic procedures are similar to those of open procedures.[7] LP remains a complex operation that is performed mostly at high volume centers but more recently robotic partial nephrectomy has been increasingly performed since it appears to simplify the procedure for the surgeon.[8] LR is commonly done at community and academic centers even at the risk of overuse for tumors that may be amenable to nephron sparing surgery.[9,10] A small, retrospective study of patients 1 year after LR vs OR showed no significant difference in QOL[11] while a prospective study of the same procedures indicated QOL benefits in the laparoscopic group.[12]

We addressed some limitations of prior studies by prospectively assessing general and cancer specific QOL, and psychosocial adjustment using established instruments in patients with a renal mass presumed to be RCC. In this observational study we examined changes in QOL and psychosocial adjustment during the first 12 months after radical or partial surgery done via a laparoscopic or an open approach.

METHODS

Participants

Study participants had renal tumors suspected to be RCC who were scheduled to undergo surgery. They were diagnosed with early stage (clinical T1-2) disease and were undergoing attempted curative treatment. Patients were 18 years old or older and could speak and read English.

Procedure

Patients were recruited between July 2001 and December 2007. They completed a baseline questionnaire before surgery as well as additional questionnaires 3 weeks, and 2, 3, 6 and 12 months postoperatively. This study was opened when laparoscopy was not routinely offered at our institution but it became increasingly routine after 2002. The study was closed before robotic renal surgery was offered.

LR was performed as previously described with intact specimen extraction via a periumbilical or low Gibson incision.[13] The decision to pursue open, laparoscopic or nephron sparing surgery was based on patient, tumor and renal function characteristics, and was made at urologist discretion in the context of physician-patient interaction. Patients completed the preoperative questionnaire at the clinic visit. After surgery they received the remaining questionnaires in the mail to complete and return. This study was approved by the Surveillance Committee for the Protection of Human Subjects at our institution. Written informed consent was obtained before study enrollment.

Measures

Demographic and medical. Patients completed a background questionnaire that determined age, marital status and education. Medical variables such as disease stage were abstracted from patient charts. Renal function was determined by the modified diet in renal disease equation to calculate the estimated GFR.

Questionnaires. QOL was assessed by SF-36 and CARES-SF. SF-36 is a general QOL instrument that assesses 8 domains, including physical functioning, physical impediments to role functioning, bodily pain, general health perceptions, vitality, social functioning, emotional impediments to role functioning and mental health. PCS and MCS summary scores were calculated. Higher scores indicate better QOL.

CARES-SF was used to assess cancer specific QOL.[14–16] It has been extensively validated among patients with various cancers.[15] Instrument items were summed to create a global score of cancer specific QOL. Higher scores indicate poorer QOL.

The tendency to ruminate on thoughts about stressors (intrusive thoughts) and avoid thoughts or behaviors related to stressors (avoidance behaviors) were measured using IES, which assesses intrusion (intrusively experienced ideas, images or feelings) and avoidance (avoidance of certain ideas, feelings or situations).[17] The IES total score, which is the sum of the 2 subscale scores, was used in our analysis. Higher scores indicate more intrusive thoughts and avoidance behaviors.

Fear of recurrence was measured with a 5-item questionnaire developed by Litwin et al.[18] Items are summed to create a total fear of recurrence score. Higher scores indicate greater fear of recurrence.

Statistical Analysis

Descriptive statistics were calculated for participants at each of the 6 time points. We performed separate mixed model regression analysis[19] of PCS, MCS, CARES-SF, IES and fear of recurrence scores to examine differences in these variables across surgery types during the study