

ORIGINAL ARTICLE

Quality of life and functional outcomes 10 years after laparoscopic radical prostatectomy

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Abstract

Background. Minimally invasive laparoscopic radical prostatectomy (LRP) has proven equally effective as open surgery in terms of cancer control and perioperative complication rate with less bleeding and postoperative pain. However, long-term follow-up data after LRP are scarce, especially as related to quality of life (QoL).

Aim. To compare QoL and functional outcomes at least 10 years after LRP with a population-based control group matched for age and region.

Methods. Follow-up data were obtained by mailed questionnaires from patients who responded anonymously to five international questionnaires (EQ-5D, QLQ-C30, QLQ-PR25, IPSS, and IIEF). We collected self-reported outcome data directly from 49 patients who underwent LRP more than 10 years ago in our centre. The results of the patients' overall QoL and urinary continence rates were compared with 918 controls matched for region and age.

Results. Forty-two patients (86%) and 808 (88%) controls reported having no urinary leakage. Only 11 patients (24%) still had sexual activities 10 years after LRP, and three were without erectile dysfunction. There was no difference in four of five statements of the self-assessed QoL questionnaires between the LRP and control group. Anxiety level was higher in the LRP group (44%) than in the control group (23%).

Conclusion. Patients reported high self-assessed QoL, although they also reported low sexual activity 10 years after LRP. Prevalence of urinary leakage was similar in both groups. However, anxiety was more common in LRP patients.

Key words: *Functional outcome, laparoscopic radical prostatectomy, prostate cancer, quality of life*

Introduction

Today, a large number of men have their prostate cancer detected because of raised serum PSA concentrations. This situation leads to earlier diagnosis in younger men who would be treated by radical prostatectomy with potential side-effects, effects that can impact patients' long-term quality of life (QoL) and sexual and urinary function. Prostate cancer patients who have a life expectancy of two decades or more after diagnosis are common nowadays, which emphasizes the importance of long-term follow-up for functional outcome and QoL after surgery. Previously, some long-term QoL data after open radical

prostatectomy, including the Scandinavian Prostate Cancer Group (SPCG)-4 study, have been presented (1). However, minimally invasive laparoscopic radical prostatectomy (LRP) was first described about 20 years ago, and long-term follow-up data are lacking. LRP has proven equally effective as compared with open surgery in terms of oncological outcome and the perioperative complication rate, with less bleeding and postoperative pain (2,3). However, it is still unclear whether LRP can measure up to the long-term results of open surgery, especially within the QoL domains.

Some 12 years ago, LRP was introduced to treat localized prostate cancer in our centre. We report our

findings of QoL and functional outcomes 10 years after LRP and compare these results with those of a population-based control group matched for age and region in central Sweden, 'Life & Health' (L&H) in 2008 (4).

Materials and methods

During 1999 to 2003, we performed 63 LRPs in our regional centre by a single surgeon using the Montsouris technique (5). According to Statistics Sweden, there are 54 of 63 patients alive and still living in the same region of central Sweden. Five patients died (two died of prostate cancer), and four moved from the region without leaving a contact address. All 54 living patients who could be contacted provided written informed consent to participate before answering the questionnaires; patients who had received written information, agreed to participate, and signed the consent form were included in the study. Five questionnaires were sent to these 54 patients. Of these 54 patients, 49 (91%) completed and returned the questionnaires. All answers were anonymous and confidential. Patients who received salvage radiation (eight patients) or hormone therapy (four patients) were included in the analysis. The study was approved by the Regional Ethical Review Board in Stockholm, Sweden (ID no. 2010/1673-31/3).

Functional results were recorded by the use of two internationally accepted screening instruments: the International Prostate Symptom Score (IPSS) and the International Index of Erectile Function (IIEF-5). To evaluate QoL three internationally validated questionnaires were used: 1) The EuroQol Group's EQ-5D as a standardized instrument for use as a measure of health outcome and overall health-related QoL (HRQoL); 2) The instrument from the European Organization for Research and Treatment of Cancer (EORTC) QLQ-C30 for assessments of QoL of cancer patients; and 3) The prostate cancer specific module EORTC QLQ-PR25. Scales for functions/symptoms were calculated according a special form of the EORTC (scoring the QLQ-C30 and QLQ-PR25 version 3.0).

During the spring of 2008, 40,674 individuals in five counties in mid-Sweden answered the 'Liv & Hälsa' (L&H) inquiry about their personal health, sickness leaves, living conditions, ways of living, and their contacts with medical services. The EQ-5D instrument and some other specific questions (including urinary leakage) were used. Data were obtained using a postal survey questionnaire, with fixed list answers, sent to a random population sample of men and women aged 18–84 years. The sampling was random and stratified by gender, age group,

county, and municipality. Data collection was completed after two postal reminders. The overall response rate was 60% (4). From these data, men ($n = 918$) from the same region and with the same ages were chosen to compare with the overall QoL and urinary leakage rates of the LRP patients.

Statistics

Correlation tests (Spearman's rank correlation) and two tests of independence (Pearson chi-square and Fischer's exact test) were performed with SPSS (The Statistical Package for Social Sciences, version 19.0). A few of the population-based controls did not respond to some of the questions, and these participants were excluded from further analysis.

Results

Of the 54 patients in the LRP group, 49 (91%) responded to the questionnaires. All patients underwent LRP more than 10 years ago (follow-up period 10–14 years, median 12.2 years). The median age of the patients was 77.3 years at the time of follow-up (range 67–82 years). Urinary function recorded by the IPSS instrument showed the following: 32 (65%) LRP patients had mild or no urinary dysfunction (score 0–7), 16 patients (33%) moderate urinary dysfunction, and 1 patient (2%) severe urinary dysfunction (score 20–35). Concerning erectile function, 11 patients (24%) reported still having sexual activity; only 3 patients (6%) had more than 22 in IIEF-5 score, i.e. no erectile dysfunction (ED) per definition. Nine patients (18%) exhibited mild to moderate ED (score 8–17), while the other 37 (76%) had severe ED. Patients' self-assessed QoL in response to questions about global health status (questions 29 and 30 of the EORTC QLQ-C30 questionnaire) was rather good. Further, 26 (53%) and 27 patients (55%) described their health and QoL, respectively, as very good during the past week (mean scale score was 75). Function scales were relatively high (between 80 and 90), and symptom scales were relatively low (between 1 and 21) (Table I). The patients' urinary and hormonal treatment-related symptom scales on the specific QoL questionnaire (EORTC QLQ-PR25) were 10 and 11, respectively, and incontinence aid and bowel symptoms scales were low (3.39). Their sexual activity and functioning scale scores were very low (3.6–3.9) (Table II).

An age- and region-matched control group of 918 Swedish men was sampled from the L&H 2008 study (4). They answered the same EQ-5D questionnaire as the LRP patients. There were no

Table I. Laparoscopic radical prostatectomy patients' scoring of the QLQ-C30 questionnaire.

	Raw scores ^a	Function/symptom scales ^b
Global health status/QoL	5.51	75
Functional scales		
Physical functioning	1.29	90
Role functioning	1.56	81
Emotional functioning	1.33	89
Cognitive functioning	1.39	87
Social functioning	1.62	80
Symptom scales/items		
Fatigue	1.60	20
Nausea and vomiting	1.03	1
Pain	1.47	16
Dyspnoea	1.62	21
Insomnia	1.56	19
Appetite loss	1.10	4
Constipation	1.31	10
Diarrhoea	1.15	5
Financial difficulties	1.10	4

^aFor all scales, the Raw score (RS) is the mean of the component items: $RS = (I1 + I2 + \dots + In)/n$.

^bFor functional scales: $Score = [1 - (RS - 1)/range] \times 100$. For symptom scales and global health status/QoL: $Score = [(RS - 1)/range] \times 100$.

statistically significant differences (two-tailed test) between these two groups as regards scores and proportions of individuals with or without problems of mobility, self-care, usual activities, and pain or discomfort. LRP patients reported less pain than the controls, but the difference did not attain statistical significance ($p = 0.058$). However, a greater proportion of LRP patients reported anxiety ($p < 0.001$) (Figure 1).

Another question to both the LRP patients and the control group was if they suffered from urinary leakage. Seven (14%) of the LRP patients reported that they had urinary leakage and 110 (12%) of the controls. Urinary leakage was evaluated in more detail in the LRP patients by means of the number of pads the patients needed per 24 h and stratified as follows: 0–1 pad no leakage, 2–3 pads mild leakage, > 3 pads severe leakage. After LRP, one patient (2%) had severe leakage, and six patients (12%) had mild leakage.

Discussion

In this descriptive study we reviewed the records of 49 of 54 consecutive living patients who underwent LRP for localized prostate cancer from 1999 to 2003 in our centre. Interestingly, a high self-assessed QoL was reported by most of the LRP patients that was comparable with that of a population-based control group matched for age and region. Prevalence of urinary leakage was similar in the two groups. However, ED and anxiety were more common in the LRP group.

To our knowledge, the present results provide the first description of outcomes experienced in a cohort of unselected patients who had undergone LRP more than 10 years ago. LRP has been widely used in clinical practice for less than 15 years (6). Functional outcome and QoL are rarely reported in the literature beyond 10 years. Long-term results of assessment of QoL and urinary/sexual functions are key issues in that such results provide important information regarding patient counselling, which is even more important today because there is another similar minimally invasive technique—robot-assisted LRP that is developing quickly at present.

Our findings are likely to be more representative of the overall QoL and prevalence of urinary and sexual dysfunction following LRP for localized

Table II. Laparoscopic radical prostatectomy patients' scoring of the QLQ-PR25 questionnaire.

	Raw score ^a	Function/symptom scales ^b
Urinary symptoms	1.46	11.46
Incontinence aid		3.39
Bowel symptoms	1.14	3.39
Hormonal treatment-related symptoms	1.42	10.49
Sexual activity	1.85	3.6
Sexual functioning	1.16	3.9

^aFor all scales, the Raw score (RS) is the mean of the component items: $RS = (I1 + I2 + \dots + In)/n$.

^bFor functional scales: $Score = [1 - (RS - 1)/range] \times 100$. For symptom scales: $Score = [(RS - 1)/range] \times 100$.

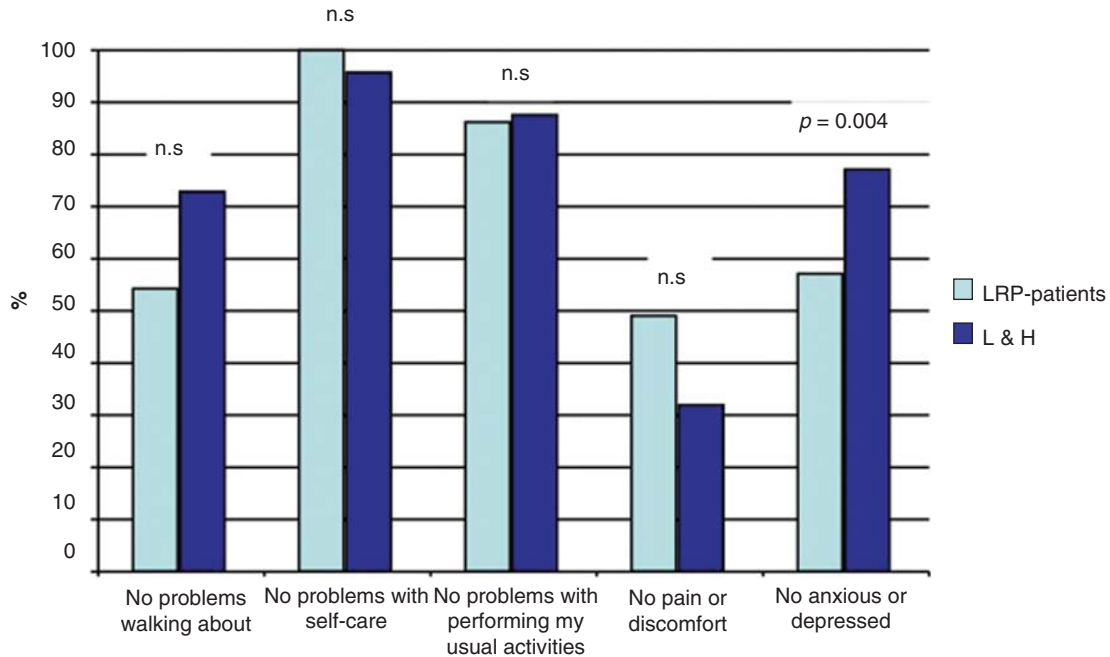


Figure 1. EQ-5D without problems.

prostate cancer compared with previous studies. Such previous studies were limited to single or multiple institutional-based patient series and not based on self-reported data of the patients (7-9). One study—the SPCG 4 study—reported QoL issues after long-term follow-up with retropubic open radical prostatectomy (1).

In the present study, follow-up data were obtained from patients who answered five well-known international questionnaires anonymously. We collected self-reported outcome data directly from the patients rather than relying on medical records, based on the assumption that the latter may not adequately record functional status following treatment. Further, we obtained information anonymously to assess potential confounding and modifying factors.

One of the most important results in this study is that there were no significant differences in the prevalence of urinary incontinence between the LRP and control group. It seems that urinary incontinence is not a major long-term complication in our centre, as shown not only by the results of the self-assessment questionnaires (QLQ-PR25) from the LRP patients and controls but also the IPSS results from the LRP patients only. It is shown that LRP is effective in abolishing urinary symptoms due to obstruction caused by prostate hyperplasia, but may cause stress urinary incontinence (1,10). Likewise we know that during a 10-year follow-up urinary symptoms are bound to get worse in a control population due to obstructive symptoms. The results may be one major

reason why LRP patients report so good overall QoL scores.

The frequency of ED in our series was rather high in the 10-year follow-up after LRP. However, the age of the patients 10 years post-LRP was rather high, with most patients aged over 75 years. Previous studies have shown that ED after LRP is correlated to the patient's age. A 24-month survey showed that 37.6% of younger men (< 65 years), in comparison with 52.6% of older men (\geq 65 years), reported that they suffered from ED (8,10). It also adds significantly to this very high level of ED that patients in this study were among the first 100 LRP patients in our centre. The technical skill with this technique has improved with time, and a nerve-sparing technique was not used in the first 50 LRP patients. That is probably one of the major reasons why our ED frequency is higher than that reported after open surgery (11,12). In our study 11 patients (24%) reported that they still had sexual activity. This figure can be compared with 68% of Swedish married men aged 70 years (13) and 39% of American men aged 75–85 years (14). Our result may be because the long-term postoperative change in sexual ability and quality led to patients' lower sexual desire. Postoperative hormone therapy and salvage radiation could also impact patients' sexual health. One limitation of our study is that data on preoperative ED and its treatment were missing. Furthermore, there was no survey question on ED in previous population-based QoL studies, which meant that we were unable to

compare the frequency of ED between LRP patients and men of the same age living in this region. Despite the high level of ED reported in this 10-year survey, most men (75.5%) were satisfied with their overall QoL, results that are similar to those previously reported (1,8,9,11).

Analysis of the results of the EQ-5D questionnaires in this study showed no statistically significant differences between the LRP and control groups as regards scores and proportions of individuals with or without problems of mobility, self-care, usual activities, and pain or discomfort. However, a greater proportion of LRP patients reported anxiety and depression. A diagnosis of prostate cancer in itself commonly increases the risk of anxiety and depression. Patients who live with the suspicion of prostate cancer recurrence or obtain adjuvant therapy suffer from increased anxiety and stress. The incidence of suicide is known to increase among patients with prostate cancer (15). Reasons given for the increased suicide risk in this group of patients are general cancer distress, treatment-related worries, concerns about physical limitations and pain (16). Our results show that the follow-up of LRP patients should not only focus on early detection of tumour PSA relapse, but also on moral support. The LRP patients in this study reported less pain than the controls. One possible explanation for this finding might be that the LRP patients assumed the question to be related only to pain caused by the prostate cancer.

Our study has several potential limitations. One limitation concerns the absence of baseline data for the LRP patients. Yet, comparisons with age-matched controls tend to result in similar groups at baseline regarding possible confounders. Statistical power was lost by dichotomizing the outcome, but dichotomization was applied to get a better measure of the effect. Another limitation is the different time periods the surveys were administered. The LRP patients answered the questionnaires recently, whereas the survey was given to the controls in 2008. Theoretically, the results of the QoL survey may be different for different periods because of the influence of several factors, including social, economic, weather/seasonal, and mass media. Factors affecting QoL scores might also include education level, monthly expenses for treatment, and disease stage (17). However, the large population-based cohort in this study may have confined this limitation. A third limitation is the relatively low number of LRP patients compared with the rather high number of men in the control group. However, in this specific region of Sweden these LRP patients were the only ones available for the study.

In summary, our results provide novel information on overall QoL and urinary and sexual function more

than 10 years after LRP. The present results should prove particularly helpful to community-based patients exposed to different treatment options. Because this multicentre study is still ongoing, we hope to provide more information on the QoL and functional status of our LRP patients in the future.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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