Original Study

Long-Term Oncologic Outcome of an Initial Series of Laparoscopic Radical Prostatectomy for Clinically Localized Prostate Cancer After a Median Follow-up of 10 Years

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Abstract

The long-term oncologic outcomes for laparoscopic radical prostatectomy (LRP), a minimal invasive approach for the treatment of localized prostate cancer, are still only sparsely available. We, therefore, evaluated the outcomes after 10 years of an initial series of 100 patients who had undergone LRP. The estimated 10-year biochemical recurrence-free survival was 78.6%, indicating excellent long-term oncologic control for patients with localized prostate cancer.

Introduction: When laparoscopic radical prostatectomy (LRP) was introduced as a novel treatment option for prostate cancer, it had to compete with the established open techniques. The short- and intermediate-term oncologic and functional outcomes were encouraging and comparable to those with retropubic radical prostatectomy. However, the long-term oncologic safety for LRP has yet to be fully elucidated. We evaluated the long-term oncologic outcomes of an initial series of patients who had undergone LRP. **Patients and Methods:** An initial unselected and consecutive series of 100 patients who had undergone LRP for clinically localized prostate cancer from 1999 to 2001 was identified. The pre-, intra-, and postoperative data were collected. Biochemical recurrence (BCR) was defined as a prostate-specific antigen (PSA) value of $\geq$ 0.2 ng/mL. The outcome measures were cancer control (CC), BCR-free survival (BCRFS), cancer-specific survival (CSS), and overall survival (OS). **Results:** The mean patient age was 64 $\pm$ 7 years, and the mean preoperative PSA level was 9.6 $\pm$ 8.3 ng/mL. Of the 100 patients, 79 (79%) had stage pT2 and 15 (15%) had stage pT3 disease. Positive surgical margins were found in 25 patients (25%; 16.4% for pT2 and 40% for pT3). The median follow-up time was 126 months (range, 60-176 months). The 5-year CC rate was 82%. The estimated 10-year BCRFS was 83% and 80% for patients with stage pT2 and pT3 tumors, respectively. The median time to BCR was 52 months (range, 6-144 months). The estimated 10-year CSS and OS was 98% and 93%, respectively. **Conclusion:** Our long-term follow-up data from an initial unselected patient cohort have indicated that LRP offers excellent long-term oncologic control for patients with localized prostate cancer.

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Introduction

Laparoscopic radical prostatectomy (LRP) for the treatment of clinically localized prostate cancer (PCa) was introduced in 1997 by Schuessler et al.[1] The lower intra- and perioperative morbidity compared with the reference standard technique of open retropubic radical prostatectomy (RRP) was one proposed advantage of the

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Table 1 Patient Characteristics (n = 100)

Characteristic	Value
Preoperative data	
Age (years)	63.5 ± 6.5
Body mass index (kg/m^2)	26.5 ± 3.1
Preoperative PSA (ng/mL)	
Mean	9.6 ± 8.3
<10	69 (69)
≥10	31 (31)
Clinical stage	
T1	53 (53)
T2	45 (45)
T3	2 (2)
Biopsy Gleason score	
5-6	69 (69)
7	23 (23)
8-10	8 (8)
Risk group[a]	
Low	47 (47)
Intermediate	36 (36)
High	17 (17)
Neoadjuvant hormone deprivation therapy	5 (5)
Intraoperative data	
Operative time (min)	292 ± 101
Estimated blood loss (mL)	674 ± 563
Lymph node dissection	39 (39)
Nerve-sparing procedure	
None	38 (38)
One side	42 (42)
Both sides	20 (20)
Conversion	4 (4)
Pathologic results	
Prostate weight (g)	54 ± 19
Positive margin status	
pT2a-T2c	13 (16)
pT3a-T3b	6 (40)
pT4	6 (100)
Localization of margin	
Apex	24 (56)
Dorsal/lateral	4 (16)
Basis	5 (20)
Multiple	2 (2)
pT stage	
pT2a-T2c	79 (79)
pT3a-T3b	15 (15)
pT4	6 (6)
Gleason score	
4-6	54 (54)
7	32 (32)
8-10	14 (14)
Lymph node yield	10 ± 4
Positive nodal status	5 (5)

Data presented as mean ± standard deviation or n (%).
Abbreviation: PSA = prostate-specific antigen.
[a]D'Amico classification.[16]

novel minimally invasive technique. However, to become a true alternative for the treatment of clinically localized PCa, the non-inferiority of LRP compared with RRP in terms of functional and oncologic outcomes also had to be shown.

The initial reports were encouraging and revealed lower perioperative morbidity for the minimally invasive approach.[2-5] The postoperative urinary incontinence and erectile dysfunction rates were comparable to those reported from large case series of RRP.[2,5-7] The initial data regarding the oncologic safety of LRP were limited to the positive surgical margin (PSM) rates as a predictor of tumor recurrence. Several groups reported PSM rates after LRP, comparable to those reported for RRP.[6-8] Subsequently, the short- to mid-term oncologic outcomes, including biochemical recurrence-free survival (BCRFS), cancer-specific survival (CSS), and overall survival (OS), were reported from larger cohorts.[9-15] The promising initial results led to the acceptance of LRP as a suitable treatment option for localized PCa. However, the true long-term oncologic safety of LRP is yet to be fully elucidated.

The aim of the present investigation was to analyze long-term oncologic outcomes of an initial unselected and consecutive series of patients who had undergone LRP for clinically localized PCa.

Patients and Methods

The initial 100 patients who had undergone LRP for clinically localized PCa from 1999 to 2001 at our tertiary care academic center (University Hospital Zürich) were retrospectively identified. Before 1999, RRP was the standard surgical treatment option offered to patients with localized PCa at our institution. In 1999, LRP became the standard procedure in our center, and no patient underwent open RRP during the study period. Thus, the patient cohort in the present investigation represents a true consecutive and unselected patient series. The electronic hospital medical records were reviewed to collect the pre-, intra-, and postoperative data. The referring urologists or the patients' general practitioners were interviewed for follow-up information if the follow-up examinations were not performed at our center. The local ethics committee approved the present study.

LRP was performed by a single surgeon (T.S.) using the transperitoneal technique described by Guillonneau and Vallancien[4] in 2000. Bilateral pelvic lymph node dissection was performed in patients with intermediate- or high-risk PCa. Preoperative risk

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