Extraperitoneoscopic Transcapsular Adenomectomy: Complications and Functional Results After at Least 1 Year of Followup

Francesco Porpiglia,*,† Cristian Fiori,† Barbara Cavallone, Ivano Morra, Riccardo Bertolo and Roberto Mario Scarpa

From the S. C. D. U. Urologia Dipartimento di Scienze Cliniche e Biologiche, Facoltà di Medicina e Chirurgia "San Luigi Gonzaga," Università degli Studi di Torino, Azienda Ospedaliera Universitaria "San Luigi Gonzaga," Orbassano, Italia

Abbreviations and Acronyms

BMI = body mass index
BPH = benign prostatic hyperplasia
EPIC = Expanded Prostate Cancer Index Composite
HoLEP = prostate holmium laser enucleation
IIEF-5 = International Index of Erectile Function-5
I-PSS = International Prostate Symptom Score
LSP = laparoscopic simple prostatectomy
PSA = prostate specific antigen
Qmax = maximum urinary flow
QOL = quality of life
TURP = prostate transurethral resection

Submitted for publication August 25, 2010.
Study received institutional review board approval.

* Correspondence: Division of Urology, Department of Clinical and Biological Sciences, University of Turin San Luigi Hospital, Regione Gonzole 10 10043 Orbassano (Turin), Italy (telephone: +390119026558; FAX: +390119038654; e-mail: porpiglia@libero.it).
† Equal study contribution.

Purpose: Laparoscopic simple prostatectomy has been proposed to treat large glands. To date groups have investigated the feasibility and perioperative results of laparoscopic simple prostatectomy but to our knowledge no study has focused on its complications and functional results at longer followup. We investigated complications and functional results in patients with a large prostate who were treated with laparoscopic simple prostatectomy and had at least 1 year of followup.
Material and Methods: From our prospectively maintained database we extracted data on 78 patients treated with laparoscopic simple prostatectomy at our institution who had at least 1 year of reported followup. Demographics, perioperative results, early and late complications, and functional results were evaluated. Followup was planned at 1, 3, 6 and 12 months, and every 6 months thereafter.
Results: Mean followup was 30 months. Grade III complications were recorded in 2 cases and late complications were reported in 4 (5%). Statistically significant differences were observed in the International Prostate Symptom Score, the International Prostate Symptom Score quality of life index and maximum urine flow when comparing preoperative and postoperative results. No significant differences were recorded in maximum urine flow or the International Prostate Symptom Score quality of life index during followup.
Conclusions: Results suggest that laparoscopic simple prostatectomy is safe and effective even after a significant period, as indicated by the low complication rate and positive, stable functional results found during followup. In our opinion laparoscopic simple prostatectomy can be offered to patients as a valid treatment option for a large prostate at advanced laparoscopic centers.

Key Words: prostate, prostatic hyperplasia, prostatectomy, laparoscopy, complications

BENIGN prostatic hyperplasia is one of the most common diseases in aging males. It affects about 70% of men 70 years old or older and is a significant cause of morbidity in those with BPH greater than 60 gm.[1,2] Despite the increasing popularity of bipolar TURP and HoLEP, which some groups consider the best treatment for BPH regardless of prostate size,[3–5] open simple prostatectomy remains the procedure of choice for glands too large for safe endoscopic resection.[6]

In recent years LSP was proposed.[7] Preliminary results suggest that LSP may be comparable to open surgery with the advantage of being less invasive.[8–12] Nevertheless, most reported

0022-5347/11/1855-1668/0
THE JOURNAL OF UROLOGY®

Vol. 185, 1668-1673, May 2011
Printed in U.S.A.
DOI:10.1016/j.juro.2010.12.047

studies describe the feasibility and perioperative results of LSP.[8–12] To our knowledge no group to date has focused on the complications arising from LSP and its functional results at longer followup. We reviewed our clinical experience with LSP to investigate its complications and functional results in a study of patients with at least 1 year of followup.

MATERIALS AND METHODS

After receiving institutional review board approval we reviewed data on all patients treated with LSP by the same surgeon (FP) for a large prostate (greater than 80 cc) between January 2004 and June 2010 at our institution. Data were obtained from our prospectively maintained database. The initial 10 patients treated with LSP in 2003 were excluded from analysis. For study inclusion we considered only those with at least 1 year of reported followup data.

Surgical Technique

We performed transcapsular adenomectomy according to the Millin technique using an extraperitoneoscopic approach, as previously reported.[12] When patients presented with bladder stones, the stones were removed during the intervention through a capsular incision. In cases of significant bladder diverticulum they were removed laparoscopically at the same operative session before adenomectomy with no variation in the number or positioning of operative ports.

Patient Data Extraction and Analysis

Preoperative evaluation. Preoperatively we determined patient age, BMI, medical history, hemoglobin, urinalysis, urine culture, prostate and adenoma volume on transrectal ultrasound, and PSA blood levels. When PSA was higher than 4 ng/ml, we also performed prostatic mapping to rule out adenocarcinoma. I-PSS, I-PSS QOL index and IIEF-5 were administered to all patients.

Intraoperative and postoperative evaluation. Operative time, blood loss, postoperative day 1 hemoglobin, catheterization time, hospital stay and surgical drain removal were determined. Intraoperative complications were also recorded. Intraoperative hemorrhage was defined as bleeding during the procedure that required transfusion, as ordered by anesthesiologist. Postoperative complications that developed during the postoperative hospital stay were also recorded.

Pathological analysis. A single uropathologist reviewed all pathological analyses. Prostate cancer was classified according to the 2002 TNM classification. Prostate pathological weight was also recorded.

Followup assessment. Patients returned for followup 1, 3, 6 and 12 months after surgery. Followup visits included PSA measurement, uroflowmetry, I-PSS, I-PSS QOL index and IIEF-5 score. To assess patient satisfaction with the surgical intervention EPIC questionnaire question 32 was administered at the followup visits. EPIC questionnaire question 32 states, "Overall, how satisfied are you with treatment you received for your prostate disease intervention?" Responses are rated as 1—extremely dissatisfied, 2—dissatisfied, 3—uncertain, 4—satisfied and 5—extremely satisfied. Complications during followup were also recorded. After the 12-month followup visit patients were evaluated every 6 months. PSA, uroflowmetry, I-PSS, I-PSS QOL index and complications were recorded.

For study purposes complications were defined as early when they occurred within 30 days after surgery, and late when they developed more than 30 days after surgery. Early complications were classified according to the Clavien system.[13] Of the 92 patients treated 78 met study inclusion criteria and were included in analysis.

Statistical analysis. All statistical analysis was done with Statistica (StatSoft®). Data showed a normal distribution. Descriptive analysis was used to evaluate all study variables. Qualitative analysis was done with the chi-square and Fisher exact tests, and quantitative analysis was done with Student's t test. Multiple regression analysis was used to evaluate complication risk factors. Data are shown as the mean ± SD. In all analyses the differences were considered statistically significant at $p < 0.05$. Instances with no statistically significant results are indicated.

Study end points. The study primary end point was to evaluate the safety of the procedure by evaluating intraoperative, early and late complications. A secondary end point was to evaluate its functional results based on I-PSS, IIEF-5 score and uroflowmetry.

RESULTS

Table 1 lists the baseline characteristics of 78 consecutive patients. All interventions were completed laparoscopically. Table 1 also lists perioperative data. Mean followup in the entire cohort was 30 months (range 12 to 66).

Pathological Analysis

BPH was diagnosed in 60 cases (77%), BPH plus chronic prostatitis was diagnosed in 14 (18%) and prostate cancer was diagnosed in 4 (5%). All prostate tumors were stage pT1a. In 2 cases the Gleason score was 5 (2 + 3) and in another 2 it was 6 (3 + 3). Median specimen weight was 70 ± 18 gm.

Complications

Intraoperative complications were noted in 2 cases (2.5%). In these patients bleeding that required intraoperative transfusion of 2 U red blood cells per patient was recorded but the intervention was completed as usual.

Early complications were recorded in 11 patients (14%) (table 2). Nine of the 11 complications (81%) were grade II according to the Clavien system.[13] Bleeding or bleeding related complications, ie clot retention, was the most common adverse event of surgery, noted in 4 of the 11 patients (36%). No patient reported urinary incontinence.

When comparing the subgroup of 11 patients who had postoperative complications with the subgroup