ENDOUROLOGY & LAPAROSCOPY

3-year actuarial biochemical recurrence-free survival following laparoscopic radical prostatectomy: experience from a tertiary referral center in the United States

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Purpose: We performed a prospective analysis of pathological and oncological outcomes following laparoscopic radical prostatectomy at a medical center in the United States.
Materials and Methods: A total of 528 men underwent laparoscopic radical prostatectomy between April 2001 and August 2005. We excluded 4 open surgical conversions (0.8%) and 16 men (3.0%) without followup. The remaining 508 men had a mean preoperative prostate specific antigen of 6.0 ng/mL (range 0.3 to 27) and Gleason score of 6.3 (range 6 to 10). Stage was cT1b in 1 case (0.2%), cT1c in 350 (68.9%), cT2a in 135 (26.6%), cT2b in 21 (4.1%) and cT2c in 1 (0.2%). Of the patients 89% underwent cavernous nerve preservation. Biochemical recurrence was defined and timed at the first prostate specific antigen of 0.2 ng/mL or greater if at repeat testing it remained 0.2 ng/mL or greater.
Results: Mean followup was 13.2 months (median 12, range 2 to 52). Pathological stage was pT0N0/Nx in 2 men (0.4%), pT2N0/Nx in 414 (81.5%), pT3aN0/Nx in 72 (14.2%), pT3bN0/Nx in 17 (3.3%) and pT2-3N1 in 3 (0.6%). Positive margin rates increased with higher stage (8.2% in pT2 and 39.3% in pT3 cases, $p < 0.0001$). Three-year actuarial biochemical recurrence-free survival was 98.2% for pT2N0/Nx and 78.7% for pT3N0/Nx/N1 disease ($p < 0.0001$), and it was 94.5% overall. Multivariate analysis controlling for age, preoperative prostate specific antigen, postoperative Gleason score and stage, and margin status showed that only Gleason score (greater than vs. less than 7) and stage (pT3 or any N1 vs. pT2) predicted biochemical progression.
Conclusions: Laparoscopic radical prostatectomy can provide excellent cancer control outcomes for clinically localized prostate cancer with high actuarial biochemical recurrence-free survival rates at 3 years.

Editorial Comment

Since the first laparoscopic radical prostatectomy (LRP) was described by Schuessler et al. in 1997 and then by Guillonneau et al. in 1999 this surgical technique has evolved, as well, as the laparoscopic instruments and better understanding of the "laparoscopic" anatomy allowed several other investigators to demonstrate no difference of oncological outcomes between the open and laparoscopic approach in their reports. In a couple of years we will celebrate the 10th anniversary of LRP performed by high volume tertiary care centers. I foresee that the oncological outcomes will be similar as the open surgical technique. Furthermore, we do need reports from trials that can compare different surgical approaches for the treatment of Prostate Cancer. Moreover, the ideal prostate cancer marker should be identified in the near future to prevent overtreatment of the disease and also to decrease disease specific mortality.

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Comparison of laparoscopic and open partial nephrectomy for tumor in a solitary kidney

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Purpose: We compared the postoperative and renal functional outcomes of patients undergoing open or laparoscopic partial nephrectomy for tumor in a solitary functioning kidney.
Materials and Methods: Between 1999 and 2006, 169 open and 30 laparoscopic partial nephrectomies were performed for 7 cm or smaller tumors in a solitary functioning kidney. Data were collected in an institutional review board approved registry and median follow-up was 2.0 years. Preoperative and postoperative glomerular filtration rates were estimated with the abbreviated Modification of Diet in Renal Disease equation.
Results: By 3 months after open or laparoscopic partial nephrectomy, the glomerular filtration rate decreased by 21% or 28%, respectively ($p = 0.24$). Postoperative dialysis was required acutely after 1 open partial nephrectomy (0.6%) and 3 laparoscopic partial nephrectomies (10%, $p = 0.01$), and dialysis dependent end stage renal failure within 1 year occurred after 1 open partial nephrectomy (0.6%) and 2 laparoscopic partial nephrectomies (6.6%, $p = 0.06$). In multivariate analysis warm ischemia time was 9 minutes longer ($p < 0.0001$) and the chance of postoperative complications was 2.54-fold higher ($p < 0.05$) with laparoscopic partial nephrectomy. Longer warm ischemia time (more than 20 minutes) and preoperative glomerular filtration rate were associated with poorer postoperative glomerular filtration rate in multivariate analysis. Notwithstanding the association with warm ischemia time, the surgical approach itself was not an independent predictor of postoperative glomerular filtration rate ($p = 0.77$).
Conclusions: While laparoscopic partial nephrectomy is technically feasible for tumor in a solitary kidney, warm ischemia time was longer and complication rates higher compared with open partial nephrectomy. In addition, although average loss of renal function at 3 months is equivalent (after accounting for warm ischemia time), a greater proportion of patients required dialysis temporarily or permanently after laparoscopic partial nephrectomy in this initial series. Therefore, open partial nephrectomy may be the preferred nephron sparing approach at this time for these patients at high risk for chronic kidney disease.

Editorial Comment

The authors should be congratulated for this enlightening, instructive manuscript.

Laparoscopic partial nephrectomy is a complex procedure with a steep learning curve but it has been demonstrated by several investigators including the present authors that it is a technically feasible surgery for small tumors even in solitary kidneys.

The warm ischemia time (WIT) was longer and complication rates higher compared with open partial nephrectomy but the loss of renal function was equal in 3 months for both groups.

Nonetheless, this minimally invasive approach is another viable treatment option that can be reserved for patients that can tolerate a slightly longer WIT (9 min. longer than open surgery).

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