Robotic Radical Prostatectomy for Elderly Patients: Probability of Achieving Continence and Potency 1 Year After Surgery

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Purpose: We assessed the probability of achieving continence and potency after robotic radical prostatectomy in elderly patients.

Materials and Methods: The cohort included 1,436 robotic radical prostatectomy cases performed at our institution between 2003 and 2008. Continence (pad-free) and potency (erection sufficient for intercourse) at baseline and 1 year after surgery were evaluated by the UCLA-PCI questionnaire. Point estimates of the predicted probabilities of continence and potency for age 65, 70 and 75 years were calculated from multivariate logistic regression models adjusting for age, nerve sparing status, baseline International Prostate Symptom Score and baseline Sexual Health Inventory for Men score. Patients who were impotent before surgery or those who received hormones or radiation within 1 year after surgery were censored.

Results: Mean patient age was 60 years (range 38 to 85) with 25% older than 65 years and 77 (5%) 70 years old or older. Age (OR 0.97, $p = 0.002$), baseline I-PSS (OR 0.98, $p = 0.02$) and Sexual Health Inventory for Men scores (OR 1.02, $p = 0.005$) were independently associated with being pad-free. Age (OR 0.92, $p < 0.0001$), baseline Sexual Health Inventory for Men score (OR 1.1, $p < 0.0001$) and bilateral nerve sparing (OR 2.92, $p < 0.0001$) were independently associated with achieving potency. Predicted probabilities (95% CI) of postoperative 1-year continence at age 65, 70 and 75 years were 0.66 (0.63, 0.69), 0.63 (0.57, 0.68) and 0.59 (0.52, 0.66), respectively. The corresponding probabilities of postoperative 1-year potency after bilateral nerve sparing were 0.66 (0.62, 0.71), 0.56 (0.49, 0.64) and 0.46 (0.36, 0.56).

Conclusions: In our experience there is an acceptable probability of achieving continence and potency after robotic radical prostatectomy in selected elderly patients.

Key Words: prostatectomy, robotics, urinary incontinence, erectile dysfunction, aged

Abbreviations and Acronyms

I-PSS = International Prostate Symptom Score

RP = radical prostatectomy

SHIM = Sexual Health Inventory for Men

Submitted for publication September 17, 2009.

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See Editorial on page 1671.

THE upper age limit for radical prostatectomy as a curative treatment for localized prostate cancer is controversial. Historically RP was rarely offered to patients older than 70 years due to concern for short life expectancy and poor functional outcomes. This paradigm is currently being challenged in the face of an expanding elderly population. It is expected that individuals 65 to 74 years old will comprise 10% of the United States population in 2030.[1] During the last 3 decades overall mortality related to

0022-5347/10/1835-1803/0
THE JOURNAL OF UROLOGY®

Vol. 183, 1803-1807, May 2010
Printed in U.S.A.
DOI:10.1016/j.juro.2010.01.016

heart disease has decreased by a quarter while cancer related mortality has grown by a similar increment.[2] Recently several studies have shown adequate oncological outcomes for men older than 70 years after RP.[3–5]

Continence and potency rates after open RP in patients older than 70 years may reach 80% and 50%, respectively, in large, experienced single surgeon series.[6] Results from population based studies are more modest yet they are comparable.[7] Reports of minimally invasive procedures, especially robotic RP, assessing functional outcomes in the elderly are few, relatively small and potentially confounded by an initial learning curve.[8,9]

Common limitations of reports evaluating age related outcomes are the arbitrary choice of an age cutoff and the relatively small size of the elderly patient group. Therefore, we assessed the functional age related outcomes in a large robotic RP cohort. We derived the point estimates of predicted probabilities of continence and potency at specified age values from multivariate logistic regression analysis, allowing the treatment of age as a continuous variable and adjusting for pertinent confounders.[10]

PATIENTS AND METHODS

Patient Selection

The study included 1,436 men after undergoing robotic RP for clinically localized prostate cancer with at least 1-year followup. Surgeries were performed between 2003 and 2008 by 2 experienced robotic surgeons (ALS, GPZ). In assessing continence we excluded patients from study who received radiation therapy within 1 year after surgery (43). On potency logistic regression multivariate analysis we excluded those patients who were impotent preoperatively but did not receive adjuvant or salvage therapy (308), and those who received hormones and/or radiation within 1 year after surgery (89), for a total of 407 subjects. Of these patients 27% (110) were older than 65 years.

Surgical Technique

The procedure was performed via the transperitoneal approach with antegrade dissection as previously described.[11] The bladder neck was not tailored and urethrovesical anastomosis was performed with the van Velthoven continuous suturing technique. The Foley catheter was removed 5 to 7 days after surgery. The neurovascular bundles were dissected in the interfascial or extrafascial plane following previously described criteria using selective bipolar electrocautery for hemostasis.[12]

Continence and Potency Definitions

Baseline and followup continence and potency were evaluated using the UCLA-PCI self-administered validated questionnaire. Continence was defined as being pad-free (question 14) and potency was defined as erection sufficient for intercourse (question 23). All patients were advised to use 20 mg oral tadalafil every other day in the evening starting 1 week after catheter removal for 3 months, and to attempt intercourse the morning of the next day. Actual adherence to medication use was not captured in the study.

Statistical Analysis

Univariate and multivariate logistic regression analyses were performed by modeling on binary continence and potency outcomes, adjusting for age, nerve sparing status, baseline I-PSS and SHIM score. The multivariate models were used to calculate predicted probabilities of achieving potency and continence with corresponding 95% CI for age 65, 70 and 75 years.[10] The analyses were performed with Stata® 10 SE with $p < 0.05$ considered statistically significant.

RESULTS

The cohort parameters are summarized in table 1. Figure 1 shows the distribution of age with the mean of 60 years (range 38 to 85). Of the patients 25% (359) were older than 65 years. Overall 69% of patients were pad-free and 75% were potent (excluding those preoperatively impotent and receiving adjuvant therapy) at 12 months after surgery.

Table 1. *Cohort parameters*

No. race (%):		
White	1,124	(78)
Black	225	(16)
Other	53	(4)
Not available	34	(2)
Mean kg/m^2 body mass index (range)	28	(17–58)
No. comorbidities (%):*		
Coronary artery disease	104	(7)
Diabetes mellitus	104	(7)
Hypertension	461	(32)
Mean preop I-PSS (range)	6	(0–35)
Mean preop SHIM score (range)	19	(0–25)
Median ng/ml prostate specific antigen (IQR)	5.2 (4.1–7.2)	
No. clinical stage (%):		
T1c	1,070	(74)
T2a	253	(18)
T2bc	104	(7)
Not available	9	(1)
No. biopsy Gleason score (%):		
6 or Less	854	(59)
7	483	(34)
8 or Greater	99	(7)
No. nerve sparing (%):		
None	93	(7)
Unilat	322	(22)
Bilat	1,021	(71)
No. pathological Gleason score (%):		
6 or Less	667	(46)
7	682	(48)
8 or Greater	87	(6)
No. pathological stage (%):		
T2	1,125	(78)
T3a	240	(17)
T3b	71	(5)
No. pos margin (%)	247	(17)
No. potency at 12 mos (%)	612	(75)
No. 0 pads at 12 mos (%)	961	(69)

* Comorbidities are not mutually exclusive or complementary.