Do Patients Know Their Nerve-sparing Status After Radical Prostatectomy?

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OBJECTIVE To determine patients' knowledge regarding their nerve-sparing status (NSS) after radical prostatectomy (RP) and what factors during their clinical treatment are associated with this.

METHODS One hundred consecutive patients attending an erectile dysfunction clinic in Toronto, Canada, with a prior RP were surveyed from December 2010 to June 2011. Patients were questioned whether they had undergone a nerve-sparing procedure and, if so, whether it was unilateral or bilateral. Patients were assessed on both knowledge (known vs unknown) and accuracy (correct vs incorrect) regarding their NSS. Operative reports were used to determine the true NSS of each patient.

RESULTS Thirty-nine percent of patients had no knowledge of their NSS. Forty-five percent of patients were able to correctly identify their NSS, including only 19% of patients undergoing a non—nerve-sparing procedure. On univariate analysis, factors associated with patients correctly knowing their NSS were age, having a nerve-sparing strategy dictated in the preoperative clinic note, nerve sparing included in the surgical consent form, and type of nerve-sparing procedure performed. On multivariate analysis, planned nerve-sparing approach dictated in the preoperative note (odds ratio [OR], 4.86), nerve sparing included in surgical consent (OR, 3.76), time since surgery (OR, 0.99), and having a bilateral nerve-sparing procedure (OR, 5.91) were associated with correctly identifying one's NSS.

CONCLUSION After RP, a significant proportion of patients with erectile dysfunction have no knowledge of whether they underwent a nerve-sparing procedure. By discussing with patients the planned nerve-sparing technique preoperatively and counseling them on their NSS postoperatively, urologists may be able to improve on patient recollection of their NSS. UROLOGY 83: 1099—1103, 2014. © 2014 Elsevier Inc.

In men, prostate cancer is the most commonly diagnosed cancer and the second most common cause of death from cancer in the United States.[1] Radical prostatectomy (RP), commonly used to treat localized prostate cancer, can result in significant long-term adverse effects such as erectile dysfunction (ED) and urinary incontinence.[2] Potency rates 12 and 24 months after RP can be as low as 54% and 63%, respectively.[3] The anatomic nerve-sparing (NS) technique during RP, first reported by Walsh, can significantly preserve potency postoperatively.[4] Because NS can have a dramatic effect on quality of life, it should be an important aspect when discussing the risks and benefits of RP to patients as part of the informed consent process. Our anecdotal experience has shown that many patients with ED after RP have no knowledge or recollection of their nerve-sparing status (NSS). The purpose of this study was to assess patients' knowledge of their NSS after RP and what clinical factors were associated with this.

METHODS

Patients attending the Erectile Dysfunction Clinic at Princess Margaret Hospital in Toronto, Ontario, are predominantly seen after complications from treatment for prostate cancer. This can include RP, external beam radiotherapy, or brachytherapy. In this study, 111 consecutive patients with a prior RP were surveyed from December 2010 to June 2011. During their visit, patients were questioned whether they had knowledge of their NSS (known vs unknown). Those who responded in the affirmative were asked to specify what type of NS procedure they had: bilateral nerve-sparing RP (BNSRP), unilateral nerve-sparing RP (UNSRP), or non—nerve-sparing RP (NNSRP). Complete clinical data were then collected through a retrospective chart review on each patient using the electronic medical records. This included patient demographics, age at surgery, clinical notes, prostate-specific antigen level, surgeon, consent for surgery, approach (open, laparoscopic, or robotic), NSS, pathologic stage and grade, salvage radiotherapy, and length of follow-up after surgery. Preoperative ED was determined from the preoperative clinic note and defined as a score <22 on the International Index of Erectile Function-5 questionnaire or documented ED. Operative reports were used to determine the true NSS of each patient. All patients

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Table 1. Univariate analysis of factors associated with patients having knowledge (known vs unknown) of their nerve-sparing status

Variable	Crude OR	95% CI Lower	95% CI Upper	*P* Value
Preoperative				
Non-English language	0.96	0.15	6.00	.962
Single, divorced, or widowed	0.61	0.16	2.25	.456
Preoperative ED	0.76	0.34	1.71	.501
Nerve sparing dictated in preoperative clinic note	2.63	1.09	6.32	.031
Nerve sparing included in surgical consent	17.19	2.20	134.62	.007
Preoperative PSA (ng/mL)	0.98	0.95	1.02	.352
Clinical stage				
T1	1.00			
T2	1.12	0.45	2.79	.807
Biopsy Gleason grade				
Low	1.00			
Intermediate	1.03	0.44	2.41	.939
High	1.11	0.23	5.31	.895
Preoperative time (wk)	0.94	0.86	1.03	.184
Operative				
Age at surgery (y)				
<50	1.00			
50-59	0.24	0.03	2.13	.199
60-69	0.22	0.02	1.94	.172
≥70	0.07	0.01	0.88	.039
Surgical approach				
Open	1.00			
Laparoscopic	0.89	0.23	3.44	.870
Robotic	0.68	0.22	2.08	.500
Nerve sparing performed				
Non—nerve sparing	1.00			
Unilateral nerve sparing	15.60	3.15	77.21	.001
Bilateral nerve sparing	8.25	2.11	32.22	.002
Extracapsular extension	0.81	0.35	1.89	.622
Surgical Gleason grade				
Low (6)	1.00			
Intermediate (7)	1.19	0.44	3.21	.725
High (8-10)	1.50	0.29	7.68	.627
Positive surgical margins	0.50	0.17	1.52	.223
Postoperative				
Salvage radiotherapy	1.08	0.36	3.25	.893
Follow-up (wk)	1.00	1.00	1.00	.591

CI, confidence interval; ED, erectile dysfunction; OR, odds ratio; PSA, prostate-specific antigen.

had their RP performed at Toronto General Hospital by academic uro-oncologists, each of whom had at least 10 years of experience and an approximate practice volume of 70 RP/y.

Patients were excluded from the analysis if NS could not be determined from the operative report either due to it not being reported or the operative report not being accessible. This resulted in 100 patients being included in the final analysis.

Table 2. Multivariate analysis of factors associated with patients having knowledge (known vs unknown) of their nerve-sparing status

Variable	Adjusted OR	95% CI Lower	95% CI Upper	*P* Value
Nerve sparing dictated in preoperative clinic note	2.31	0.70	7.67	.172
Nerve sparing included in surgical consent	17.23	1.88	158.15	.012
Preoperative time (wk)	0.95	0.85	1.06	.329
Age at surgery (y)				
<50	1.00			
50-59	0.28	0.02	3.20	.306
60-69	0.25	0.02	2.92	.267
≥70	0.12	0.01	2.23	.153
Nerve sparing performed				
Non—nerve sparing	1.00			
Unilateral nerve sparing	13.19	2.10	82.76	.006
Bilateral nerve sparing	10.63	2.03	55.73	.005
Follow-up (wk)	0.99	0.99	1.00	.025

Abbreviations as in Table 1.

Simple and multivariate logistic regressions were performed to determine factors associated with patients having knowledge of their NSS using 2 different outcomes. The first outcome compared patients who reported they had no knowledge of their NSS with those who believed they knew their NSS, despite whether they were correct (known vs unknown). The second outcome looked at factors associated with patients correctly knowing their NSS (correct vs incorrect). All patients who had no knowledge of their NSS and those who did but were wrong were considered as incorrectly knowing their status.

For both outcomes, a simple logistic regression was performed for each variable. Subsequently, those variables with a *P* value <.20 were included in a multivariate logistic regression model. Both time from the preoperative clinic visit to the date of surgery and time since surgery were included in the multivariate models as they were plausible confounders. Adjusted odds ratios (ORs) were then reported for the final reduced models. Variables with $P < .05$ were considered significant.

The Research Ethics Board at University Health Network, Toronto, Ontario, approved the study protocol.

RESULTS

Complete clinical data were available for 100 patients (Supplementary Table 1). Thirty-nine of 100 patients had no knowledge of their NSS. Of the remaining 61, 8 (13.1%) believed they had an NNSRP, 19 (31.1%) believed they had a UNSRP, and 34 (55.7%) believed they had a BNSRP. On univariate analysis (Table 1), factors associated with patients having knowledge of their NSS were age ≥70 years (OR, 0.07; 95% confidence interval [CI], 0.01-0.88), NS technique dictated in the preoperative clinic note (OR, 2.63; 95% CI, 1.09-6.32), NS included in consent for surgery (OR, 17.19; 95% CI, 2.20-134.62), and having either a UNSRP (OR, 15.60; 95% CI, 3.15-77.21) or BNSRP (OR, 8.25; 95% CI, 2.11-32.22). The operating surgeon was not found to be a significant factor ($P = .379$). On multivariate analysis

Table 3. Univariate analysis of factors associated with patients correctly identifying (correct vs incorrect) their nerve-sparing status

Variable	Crude OR	95% CI Lower	95% CI Upper	*P* Value
Preoperative				
Non-English language	0.71	0.11	4.44	.714
Single, divorced, or widowed	0.70	0.18	2.64	.595
Preoperative ED	0.70	0.31	1.56	.382
Nerve sparing dictated in preoperative clinic note	4.29	1.81	10.14	.001
Nerve sparing included in surgical consent	4.27	1.41	12.91	.010
Preoperative PSA (ng/mL)	0.99	0.95	1.02	.447
Clinical stage				
T1	1.00			
T2	1.24	0.51	2.99	.639
Biopsy Gleason grade				
Low (6)	1.00			
Intermediate (7)	1.15	0.50	2.63	.742
High (8-10)	0.66	0.14	3.16	.606
Preoperative time (wk)	0.95	0.87	1.04	.272
Operative				
Age at surgery (y)				
<50	1.00			
50-59	0.13	0.01	1.15	.066
60-69	0.12	0.01	1.10	.061
≥70	0.04	0.00	0.56	.017
Surgical approach				
Open	1.00			
Laparoscopic	0.65	0.17	2.49	.528
Robotic	0.65	0.21	2.01	.453
Nerve sparing performed				
Non—nerve sparing	1.00			
Unilateral nerve sparing	6.74	1.49	30.48	.013
Bilateral nerve sparing	4.48	1.16	17.31	.030
Extracapsular extension	1.03	0.45	2.37	.946
Surgical Gleason grade				
Low (6)	1.00			
Intermediate (7)	1.04	0.39	2.76	.939
High (8-10)	0.88	0.18	4.23	.873
Positive surgical margins	0.68	0.22	2.09	.503
Postoperative				
Salvage radiotherapy	1.10	0.38	3.21	.861
Follow-up (wk)	1.00	0.99	1.00	.320

Abbreviations as in Table 1.

Table 4. Multivariate analysis of factors associated with patients correctly identifying (correct vs incorrect) their nerve-sparing status

Variable	Adjusted OR	95% CI Lower	95% CI Upper	*P* Value
Nerve sparing dictated in preoperative clinic note	4.86	1.58	14.98	.006
Nerve sparing included in surgical consent	3.76	1.01	14.03	.049
Preoperative time (wk)	0.94	0.84	1.05	.275
Age at surgery (y)				
<50	1.00			
50-59	0.16	0.01	1.73	.130
60-69	0.14	0.01	1.61	.115
≥70	0.08	0.00	1.58	.096
Nerve sparing performed				
Non—nerve sparing	1.00			
Unilateral nerve sparing	4.44	0.78	25.29	.093
Bilateral nerve sparing	5.91	1.16	30.03	.032
Follow-up (wk)	0.99	0.99	1.00	.013

Abbreviations as in Table 1.

(Table 2), NS technique included in consent (OR, 17.23; 95% CI, 1.88-158.15), having a UNSRP (OR, 13.19; 95% CI, 2.10-82.76) or BNSRP (OR, 10.63; 95% CI, 2.03-55.73), and time since surgery (OR, 0.99; 95% CI, 0.99-1.00) were associated with patients knowing their NSS.

Forty-five of 61 patients (73.8%) correctly identified the type of NS technique they had undergone. This included only 18.7% of patients undergoing an NNSRP compared with 60.1% undergoing UNSRP and 45.2% undergoing BNSRP (Supplementary Figure 1). On univariate analysis (Table 3), factors associated with patients correctly identifying the type of NS technique they had undergone were age ≥70 years (OR, 0.04; 95% CI, 0.00-0.56), plan for NS dictated in the preoperative note (OR, 4.29; 95% CI, 1.81-10.18), NS included in the consent form (OR, 4.27; 95% CI, 1.41-12.91), and type of NS procedure performed, either UNSRP (OR, 6.74; 95% CI, 1.49-30.48) or BNSRP (OR, 4.48; 95% CI, 1.16-17.31). On multivariate analysis (Table 4), NS dictated in the preoperative note (OR, 4.86; 95% CI, 1.58-14.98), NS included in consent (OR, 3.76; 95% CI, 1.01-14.03), time since surgery (OR, 0.99; 95% CI, 0.99-1.00), and having a BNSRP (OR, 5.91; 95% CI, 1.16-30.03) were associated with correctly identifying one's NSS.

COMMENT

The introduction of prostate-specific antigen screening has been implicated in the overdiagnosis and overtreatment of prostate cancer.[5] RP rates in the United States have increased dramatically over the past decade,[6,7] almost doubling from 2004 to 2010.[8] As such, it is imperative for urologists to inform and counsel patients regarding the potential adverse effects of surgical treatment. Ficarra et al[3] estimated that ED rates 12 months after RP were 47.8% and 24.2% for retropubic RP and robotic-assisted RP, respectively. Preservation of the cavernous nerves in dissection of the prostate during RP has been shown to improve potency rates postoperatively. Implementation of an NS technique should be discussed with patients as part of the informed consent process. Both American and Canadian Medical Associations, as well as American Urological Association's Code of Ethics, require physicians to disclose the nature of a proposed procedure and reasonably foreseeable associated risks.[9-11] Urologists likely do discuss the risk of ED to patients before RP, as a study by Boyd et al[12] found that all patients recalled being advised of this risk before treatment. However, whether NS is discussed preoperatively or postoperatively and whether patients are able to comprehend its associated complexities are not clear. This is the first study to assess patients' knowledge of their NSS after RP and identify factors associated with this.

In our study, 39% of patients with full clinical data had no knowledge of their NSS after RP. In addition, only 45% of patients were able to correctly identify the type of NS procedure they had. This suggests that a large proportion of patients are not adequately knowledgeable about the circumstances of their RP. Considering that our patient population was men seeking treatment for ED and consequently would be more concerned regarding their potency, the proportion of men without knowledge of their NSS might, in fact, be higher in the general prostate cancer population.

Comprehension during informed consent can be a problem, particularly for RP.[13] A number of studies have investigated strategies to improve the informed consent process for various surgeries, including procedure-specific complication stickers, decision aids, patient testing, interactive multimedia, and having a neutral educator.[14-20] We have identified 2 factors that might improve patient comprehension and retention of information during the informed consent process for RP. Patients were significantly more likely to correctly know their NSS when their urologist dictated that they had discussed the NS technique in the preoperative clinic note. It is possible that this could simply be an indication that more time was spent obtaining consent, a factor previously shown to increase patient comprehension.[13] However, we would suggest that if urologists were to routinely include this information in dictations for preoperative clinic visits, it will encourage them to discuss this with each patient as part of the informed consent process. We also found that when the planned NS technique was included in the surgical consent form, patients were significantly more likely to know their NSS. In our study, this was done only in 20% of cases. This is a simple step that we believe all urologists should implement when consenting patients for RP as it can increase patient comprehension and is also important from a medicolegal perspective.

A troublesome finding was that patients were significantly less likely to know their NSS when an NNSRP was performed. Only 18.7% of patients who had an NNSRP were able to correctly identify their NSS. This suggests that patients at the highest risk of postoperative impotence are the least likely to know an important risk factor. In cases in which prostatic biopsies are suggestive of extracapsular extension, urologists may be hesitant to discuss the possibility of an NS technique with patients over fear that it could lead to false promises or confusion. Introducing the concept of NS could lead higher risk patients to demand it and increase their chances of a positive surgical margin. This was disputed, however, in a study by Lavery et al[21] who found that when properly educated regarding their risk, patients are capable of making reasonable decisions regarding NS during RP. Surgeons should ensure that patients undergoing NNSRP are knowledgeable about their NSS and understand their increased risk for postoperative ED. Furthermore, disclosing the full surgical treatment with patients could help remedy the concerning level of decision regret seen in men after RP.[22]

Our study does have some limitations that should be addressed. First, it involved a select patient population, including only men attending an ED clinic after RP. As such, our results may not be generalizable to all men after an RP for prostate cancer. However, the fact that patients in our study were seeking treatment for ED would suggest that they would be more concerned and knowledgeable about their NSS. Second, because of the retrospective nature of our study, we could not control for socioeconomic factors such as education level and income status. Third, we did not assess patient satisfaction with their surgery or decision regret. Such information would be useful for patients in managing their expectations and satisfaction after surgery. Understanding the reasons behind their NSS and resultant ED might minimize their level of regret. Further studies are needed to understand the relationship between patients' knowledge of their NSS and satisfaction.

CONCLUSIONS

This study demonstrates that among men with ED after RP, a significant proportion are not aware of their NSS. Men who did not have an NS RP were significantly less likely to know their NSS and, as a result, would not be aware of a significant contributing factor to their sexual function. By discussing with patients the planned NS technique preoperatively and counseling them on their NSS postoperatively, urologists may be able to improve on patient recollection of their NSS.

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APPENDIX

Supplementary Data

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.urology.2014.01.030.