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ONCOLOGY

Sexual Satisfaction in Men Suffering From Erectile Dysfunction After Robot-Assisted Radical Prostatectomy for Prostate Cancer: An Observational Study

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ABSTRACT

Background: Preservation of erectile function is an important postoperative quality of life concern for patients after robot-assisted radical prostatectomy (RARP) for prostate cancer. Although erectile function may recover, many men continue to suffer from erectile dysfunction (ED).

Aim: This study aims to determine whether satisfaction with sexual life improves in patients with ED after RARP and which factors are associated with satisfaction during follow-up.

Methods: A review was carried out of a prospectively maintained database of patients with prostate cancer who underwent a RARP between 2006 and 2019. The "International Index of Erectile Function" questionnaire was used to describe ED (range 5-25), overall satisfaction with sexual life and sexual desire (range for both: 2-10). Patients with ED due to RARP were compared with those without ED after RARP. Mixed effect model was used to test differences in satisfaction over time. Mann-Whitney U tests and multiple logistic regression were used to assess factors associated with being satisfied at 24 and 36 months.

Outcomes: The main outcomes of this study are the overall satisfaction with sexual life score over time and factors which influence sexual satisfaction.

Results: Data of 2808 patients were reviewed. Patients whose erectile function was not known (n = 643) or who had ED at the baseline (n = 1281) were excluded. About 884 patients were included for analysis. They had an overall satisfaction score of 8.4. Patients with ED due to RARP had mean overall satisfaction scores of 4.8, 4.8, 4.9, and 4.6 at 6 mo, 12 mo, 24 mo, and 36 mo. These scores were significantly lower than those of patients without ED at every time point. In multiple regression analysis, higher overall satisfaction score at the baseline and higher sexual desire at 24 and 36 months' follow-up were associated with satisfaction with sexual life at 24 and 36 months' follow-up. No association was found for erectile function.

Clinical implications: Interventions focusing on adjustment to the changes in sexual functioning might improve sexual satisfaction; especially for those men who continue to suffer from ED.

Strengths & Limitations: Strengths of this study are the large number of patients, time of follow-up, and use of multiple validated questionnaires. Our results must be interpreted within the limits of retrospectively collected, observational data.

Conclusion: Satisfaction with sexual life in men with ED due to RARP may take a long time to improve. One could counsel patients that sexual satisfaction is based on individual baseline sexual satisfaction and the return of sexual desire after RARP. **Albers LF, Tillier CN, van Muilekom HAM, et al. Sexual Satisfaction in Men Suffering From Erectile Dysfunction After Robot-Assisted Radical Prostatectomy for Prostate Cancer: An Observational Study. J Sex Med 2021;18:339–346.**

Key Words: Prostate cancer; Erectile dysfunction; Sexual satisfaction; Radical prostatectomy

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INTRODUCTION

Prostate cancer is the second most common cancer among men.[1] Robot-assisted radical prostatectomy (RARP) is one of the recommended treatment options for localized prostate cancer with a long-term survival benefit.[2] Given the expected long-term survival after RARP, functional outcomes are of utmost importance.[3] The most common side effect of RARP is erectile dysfunction (ED). Reported rates of ED after RARP range between 10% and 90%. These wide ranges are due to differences in patient selection, surgical approaches, and heterogeneous definitions of ED.[4–6] ED is an important postoperative concern for patients, which is known to negatively impact quality of life (QoL).[7] In addition, ED is associated with anxiety, depressive symptoms, low self-esteem, and diminished intimate relationships with the partner.[3,8] Despite refinement of nerve-saving operative techniques, the introduction of robotic surgery and the combination with penile rehabilitation programs,[9,10] a recent study failed to show an increased likelihood of erectile function recovery after RARP, in the last decade.[11] Currently, a great deal of attention is being paid to predicting ED and the chances of long-term improvement of erectile function after RARP.[12–16] The overall chance of having adequate erectile function after RARP has been reported to be 35%.[17] The most well-known factors for improvement of erectile function include patient's age, comorbidities, nerve-sparing status, and preoperative erectile function.[18,19] Information on the probability of improvement of erectile function is important when counseling patients about their expected erectile function and so that they can be offered support if needed.

Patients who reach their baseline erectile function will not necessarily regain sexual satisfaction.[20] In addition to ED, sexual changes after RARP include loss of penile length, reduced sexual desire, and orgasmic dysfunction including painful orgasm and climacturia.[21–23] Some men reported that they did not find sexual changes problematic or they may cope successfully with such issues.[24] Whether satisfaction with sexual life improves in patients with ED due to RARP has been less frequently investigated.

Primary objective of our study was to examine if overall satisfaction with sexual life of patients without ED before RARP and with ED after RARP improved over time. As secondary objective, exploration of factors which could be correlated with overall satisfaction during long-term follow-up in this group.

MATERIALS AND METHODS

This is an observational study. All patients treated with RARP for localized prostate cancer, at a single center, between 2006 and 2019, were evaluated. Patients who underwent an RARP for prostate cancer were asked to fill in questionnaires before RARP and at 6, 12, and 24 months' follow-up. From 2013 onward, patients were also asked to fill in an additional at 36-months' follow-up. Questionnaires were provided via email or on paper. Patient, tumor, and surgical characteristics were available from the prospectively maintained genitourinary database at our hospital, including treatment and follow-up data.

The following questionnaires were used: the "EORTC core quality of life questionnaire" (QLQ-C30), "International Index of Erectile Function 15" (IIEF-15; containing five areas: erectile function, orgasmic function, sexual desire, intercourse satisfaction, overall satisfaction), "International Prostate Symptom Score" (IPSS), "International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form" (ICIQ-UI SF).[25–30]

In addition, the "International Index of Erectile Function 5" (IIEF-5) was used to describe erectile function at the baseline and during follow-up (min-max: 1-25). The IIEF-5 was the score most frequently filled in by the participants during follow-up to determine erectile function. Hence, the IIEF-5 was used to define and categorize ED according the validated no ED,[22–25] mild ED,[17–21] mild-moderate ED,[12–16] moderate ED,[8–11] and severe ED.[1–7,31]

Table 1. Patient characteristics of patients without ED before RARP (n = 884)

Age in years, median (IQR)	63.0 (9)
PSA-level (ng/mL), median (IQR)	8.1 (6.1)
Clinical T-stage	
cT0 (%)	219 (25%)
cT2 (%)	505 (57%)
cT3 (%)	152 (17%)
cT4 (%)	1 (0.1%)
Missing	6 (0.9%)
Pathological Gleason sum score	
5-6 (%)	189 (21.4%)
7: 3 + 4 (%)	364 (41.2%)
7: 4 + 3 (%)	143 (16.2%)
8-10 (%)	103 (11.7%)
Missing	85 (9.5%)
Pathological N-stage	
pN0 (%)	400 (45.2%)
pN1 (%)	90 (10.2%)
pNx (%)	360 (40.7%)
Missing	34 (3.8%)
Intraoperative techniques	
Fascia preservation score (mean)	4.54 (range 0-12), SD 3.0
Pelvic lymph node dissection	
Yes	501 (56.6%)
No	371 (42.0%)
Missing	11 (1.4%)
Quality-of-life data	
IIEF-5 score	22.8 (17-25), SD 2.3
Quality-of-life score	81.6 (0-100), SD 17.4
IPSS score	5.5 (0-31), SD 6.6
ICIQ incontinence score	1.3 (0-16), SD 2.6

ED = erectile dysfunction; RARP = robot-assisted radical prostatectomy; IQR = interquartile range; SD = standard deviation; IIEF-5 = international index of erectile function; IPSS=International Prostate Symptom Score; ICIQ=International Consultation on Incontinence Questionnaire.

Table 2. Categorization by time point of erectile dysfunction (ED) of the patients included for analysis

	Categories of ED				
	No % (n)	Mild % (n)	Mild-moderate % (n)	Moderate % (n)	Severe % (n)
Time points (months)					
0	73.8 (652)	26.2 (232)	*Not applicable*	*Not applicable*	*Not applicable*
6	8.2 (46)	8.4 (47)	9.5 (53)	13.2 (74)	57.3 (340)
12	14.5 (73)	10.1 (51)	10.9 (55)	12.1 (61)	52.5 (265)
24	18.0 (90)	15.6 (78)	9.0 (45)	11.4 (57)	46.1 (231)
36	14.9 (39)	12.6 (33)	10.3 (27)	10.0 (26)	52.1 (136)

Patients were divided into 2 groups: (1) patients with mild or no ED (without ED, $\geq$17) and (2) patients with mild-moderate, moderate, and severe ED (with ED, $<$ 17).[26,29]

The "overall satisfaction" score (the sum of Q13 and Q14) of the IIEF-15 questionnaire was used to describe overall satisfaction with sexual life. Q13 and Q14 have a 5-point Likert scale: 1 indicating very dissatisfied and 5 very satisfied. Satisfaction was categorized as follows, "satisfied" (overall satisfaction $\geq$8) or "not satisfied" (overall satisfaction $<$ 8).[26] The scores of the other subdomains of the IIEF-15 were used in accordance with score guideline of the IIEF-15 questionnaire.[26] The score on "quality of life" (QoL) was calculated from the QLQ-C30 in accordance with the EORTC QLQ-C30 Scoring Manual.[32]

Differences between patients with ED who were satisfied and not satisfied were calculated at 24-months and 36-months' follow-up because it is known that erectile function can still improve up to 24 months and beyond[13,33] after surgery. Patients without ED after RARP were used as the control group.

Fascia preservation score (FP score) was used as scoring system for perioperative nerve sparing.[34] The score accounts for the full circular distribution of the periprostatic nerves via a 12-tier score. FP score is described as a predictor of postoperative erectile function.[16]

Statistics

All analyses were conducted using IBM SPSS Statistics 25. Patient, tumor, and surgical characteristics were described using demographic statistics. The means and standard deviations of questionnaire outcomes were reported. To test for differences in overall satisfaction between time points (baseline, 6, 12, 24, 36 months) and difference between overall satisfaction of patients with ED and without ED after RARP, a mixed effect model was used with a random intercept per patient. For differences of patients who were "satisfied" and those who were "not satisfied" at 24 months and 36 months, the Mann-Whitney U test was used. Median and interquartile range were reported. The variables that were significant at the 0.05 level were then used to predict the satisfaction in separate simple logistic models in the subgroups with and without ED at 24 months and 36 months. Age, QoL score, IIEF-5 score, sexual desire (IIEF-15), and overall satisfaction score (IIEF-15) at the baseline were entered as explanatory variables. *P*-value $<$ .05 was considered statistically significant.

Ethics

Institutional review board (number IRBd19226) approval of the Netherlands Cancer Institute—Antoni van Leeuwenhoek Hospital was obtained.

RESULTS

Demographics

About 2808 patients treated with RARP for localized prostate cancer between 2006 and 2019 were evaluated. Patients with ED before RARP (n = 1281) and patients with unknown erectile

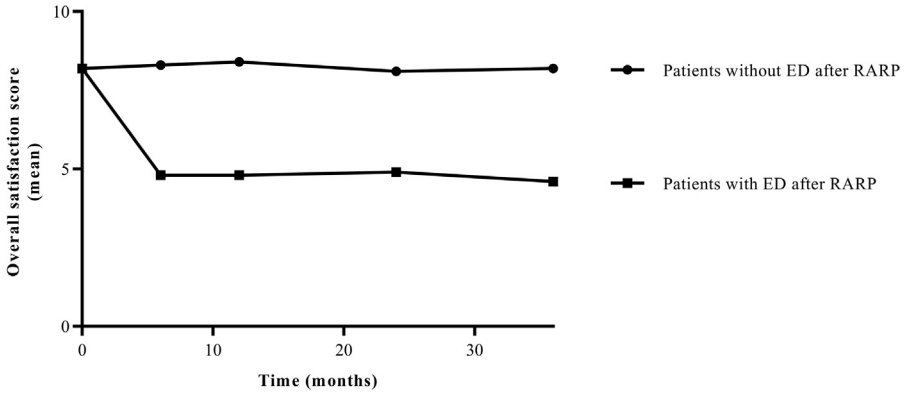

Figure 1. Sexual satisfaction score (range 2-10).

Table 3. Differences at 24-months' and 36-months' follow-up

Variable	Follow-up	Satisfied Median (IQR)	Not satisfied Median (IQR)	*P-value*
Age in years	24 mo	63.5 (8)	63.0 (7)	.8
	36 mo	63.0 (9)	63.0 (7)	.6
IIEF-5 score at the baseline (range 17-25)	24 mo	24.0 (4)	24.0 (8)	.7
	36 mo	23.0 (6)	24.0 (8)	.4
Overall satisfaction score at baseline (range 2-10)	24 mo	9.0 (2)	8.0 (2)	*<.01*
	36 mo	9.0 (2)	8.0 (2)	*.02*
QoL score (range 0 − 100)	24 mo	83.0 (17)	83.0 (16)	*.04*
	36 mo	83.0 (8)	83.0 (16)	.6
IIEF-5 score (range 17-25)	24 mo	8.0 (8.3)	4.0 (5)	*<.01*
	36 mo	7.0 (10)	4.0 (5.3)	*<.01*
Incontinence score (range 0-21)	24 mo	3.0 (5)	3.0 (6)	.6
	36 mo	3.0 (4)	4.0 (6.5)	.5
IPSS (range 0-35)	24 mo	1.0 (5)	2.0 (7)	.5
	36 mo	1.0 (6)	2.0 (6)	.6
Sexual desire score (range 2-10)	24 mo	7.5 (2)	5.0 (2)	*<.01*
	36 mo	7.0 (2)	5.0 (2)	*<.01*
FP score (range 0-12)	24 mo	3.5 (6)	4.0 (4)	.4
	36 mo	3.0 (6)	4.0 (4)	.5

FP = fascia preservation; IIEF-5 = international index of erectile function; IPSS = International Prostate Symptom Score; IQR = interquartile range; Mo = months; QoL = quality-of-life.
Mann-Whitney U test.

function before RARP (n = 643) were excluded. About 884 patients reported to have no ED before RARP and were included for analysis. All were sexually active before RARP. Their characteristics are presented in Table 1. Next, we divided them into a group of patients with ED due to RARP to compare with those who had no ED after RARP. Data were available for 467, 381, 333, and 189 patients with ED due to RARP at 6-mo, 12-mo, 24-mo, and 36-mo follow-up. For patients without ED after RARP, data were available for 93, 124, 168, and 72 patients at 6-mo, 12-mo, 24-mo, and 36-mo follow-up, respectively. All patients without ED were sexually active during follow-up. Categorization of ED by different time points is presented in Table 2.

Satisfaction

The mean overall satisfaction of patients without ED at the baseline was 8.2 (range 2-10, SD 1.7). Patients with ED due to RARP had a mean overall satisfaction of 4.8, 4.8, 4.9, and 4.6 (range 2-10, SD 1.7-2.5, $P = .2$) at 6, 12, 24, and 36 months' follow-up, respectively. The patients without ED after RARP had a mean overall satisfaction of 8.4, 8.4, 8.1, and 8.2 (range 3-10, SD 1.4 − 1.6, $P = .2$) at 6, 12, 24, and 36 months' follow-up, respectively (Figure 1). Scores of patients between patients with and without ED were significantly different ($P < .01$). Scores of the other subdomains of the IIEF-15 (erectile function, orgasmic function, sexual desire, and intercourse satisfaction) are provided in the supplemental information section (Supplementary Figures S1−S4).

Differences Between Patients With ED Who Were Satisfied and Not Satisfied With Sexual Life

Patients with ED at 24 months' follow-up, who were satisfied with sexual life at that moment, were compared to those with ED at 24 months who at that time were not satisfied with sexual life. Patients who were satisfied had a significant higher overall satisfaction score at the baseline, QoL score, IIEF-5 score, and sexual desire score than patients who were not satisfied (Table 3; *P*-values varied between <0.01 and 0.03). Age, erectile function score at the baseline, IPSS, incontinence score, and FP score were not found to be associated (Table 3, *P*-values varied between 0.05 and 0.8). In a multiple logistic regression, overall satisfaction at the baseline (OR 1.4, 95% CI 1.1-1.8, $P = .01$) and sexual desire score at 24-mo (OR 1.7, 95% CI 1.4-2.1, $P < .01$) were independent predictors of overall satisfaction in patients with ED at 24 months' follow-up (Figure 2).

The same was calculated at 36 months' follow-up. Patients with ED at 36 months' follow-up who were satisfied had a significantly higher overall satisfaction score at the baseline, IIEF-5 score, and sexual desire score than those who were not satisfied (Table 3; *P*-values varied between <0.01 and 0.06). In a multiple logistic regression at 36-months' follow-up, the same predictors were found as at 24 months: overall satisfaction at the baseline (OR 2.3, 95% CI 1.13-4.88, $P = .02$) and sexual desire score at 36-mo (OR 2.1, 95% CI 1.20-3.75, $P = .09$) (Figure 2).

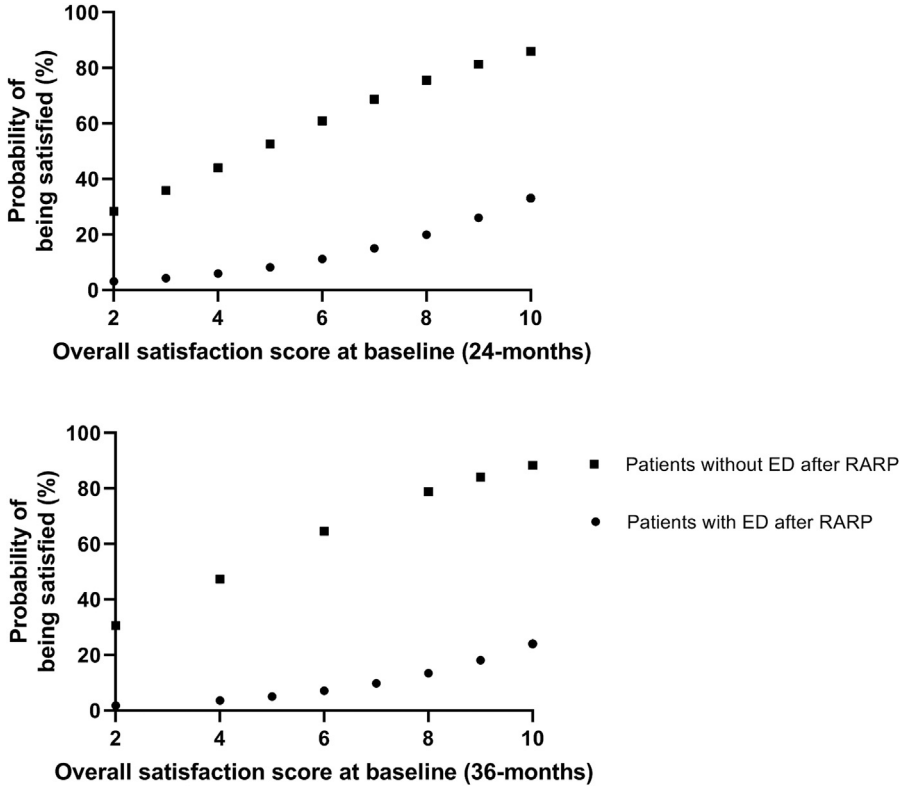

Figure 2. Probability of being sexual satisfied by sexual satisfaction score at the baseline (range 2-10), at 24-mo (above) and 36-mo follow-up (below).

Probability of being satisfied was significantly lower in patients with ED due to RARP than in patients without ED after RARP, both at 24 months and at 36 months' follow-up ($P < .01$) (Figure 2).

DISCUSSION

The goal of our study was to investigate if overall satisfaction with sexual life of patients with ED due to RARP improved over time, and to identify factors associated with satisfaction. We found no increase or decrease in overall satisfaction with sexual life between 6-months and 36-months' follow-up. A higher overall satisfaction score at the baseline and a higher score on sexual desire were associated with satisfaction at 24 and 36 months' follow-up. Erectile function score was not correlated with overall satisfaction in this group. A high satisfaction rate was observed for men with erectile function preservation after prostatectomy.

In literature, several variables were found to be associated with sexual satisfaction: sexual desire, erectile function, sexual self-esteem, age, time since diagnoses, relationship variables, and psychological variables such as depression and anxiety.[20,24,35–38] In contrast to our study, no other study evaluated satisfaction specifically in prostate cancer patients with ED due to RARP. In a study among Scandinavian patients with prostate cancer who were treated with different modalities, longer time since diagnosis was associated with higher sexual satisfaction.[35] The mean time since diagnosis was 6.1 years. In our study, overall satisfaction with sexual life score did not increase during follow-up. It can be argued that adjustment to or acceptance of new sexual function and sexual satisfaction may take longer than 3 years. In a prospective study, Dubbelman et al found no significant difference between satisfaction scores 3 months and 5 years after radical prostatectomy.[36] These findings indicate that improvement of sexual satisfaction of patients with ED due to RARP might occur over a long period. In addition, depressive symptoms occur for a longer follow-up period postoperatively and may impact sexual functioning for a longer period. Depressive symptoms may contribute to delay in improvement of sexual satisfaction in patients with ED due to RARP.[38,39]

In our study, we found no relation between overall satisfaction and age in the cohort of patients with ED due to RARP. The Scandinavian study described previously found that higher age was associated with an increase in sexual satisfaction in sexually active patients.[35] It is known that sexual activity declines with age.[40] People who are sexually active at an older age may well have continued their sexual activity because of greater sexual satisfaction and because they were able to cope with sexual changes. If this is the case, it would the idea that the satisfaction score at the baseline is important for satisfaction after treatment.

Similar to Badr et al's findings in their cross-sectional study among patients with prostate cancer treated with different

modalities, we also report that a higher score on sexual desire was associated with greater sexual satisfaction.[41] By contrast, Bravi et al found that patients with prostate cancer, treated with RARP, who had a high desire, found low erectile function to be more sexually problematic than patients with lower desire.[24] On the other hand, men with satisfactory erections after RARP can also experience sexual problems, and men with impotence can be satisfied with their sexual life. This may indicate that erectile function may be not the most important part of overall satisfaction with sexual life.[20,37,42–44] We believe it might be helpful to ask patients about sexual desire and sexual satisfaction during sexual counseling, rather than counseling them only about erectile function.

Although, erectile function is associated with increased sexual satisfaction, male sexuality is not exclusively associated with erections. We found that preoperative satisfaction is more important for postoperative sexual satisfaction than erectile function at the baseline or at 24-/36-months' follow-up. Besides penile rehabilitation for ED, psychological interventions focusing on adjustment to the changes in sexual functioning and other forms of (physical) intimacy might improve sexual satisfaction; especially for those men who continue to suffer from ED.

Some limitations should be considered. Our results must be interpreted within the limits of retrospectively collected, observational data. We only included patients treated by RARP and therefore our results may be not representative of other treatment modalities. Furthermore, we did not take into account the possible negative effect of adjuvant or salvage radiotherapy and androgen deprivation. Excluding these cases would have strengthened our conclusions. However, it can be argued that, if these additional treatments affected sexual satisfaction, sexual satisfaction would decrease over time. Overall satisfaction, however, remained constant in our study. ED is known to be a predictor of depressive symptoms.[38] Further research could include a questionnaire on depressive symptoms to investigate their impact on sexual satisfaction after RARP. Despite these limitations, our results add important new insights into sexual satisfaction in patients with ED due to RARP. The large sample size, use of multiple validated questionnaires and 3 years' follow-up are the strengths of our study.

CONCLUSION

Satisfaction with sexual life in men with ED due to RARP did not improve between 6 and 36 months' follow-up, indicating improvement of satisfaction might take a long time. One could counsel patients that sexual satisfaction is based on individual baseline sexual satisfaction and the return of sexual desire after RARP. It is vital to present realistic, individualized expectations regarding both sexual satisfaction and recovery after RARP.

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STATEMENT OF AUTHORSHIP

Leonore F. Albers performed the conceptualization, analysis, and wrote the manuscript. Corinne N. Tillier performed data management activities, administration, and supported manuscript writing. Erik van Muilekom performed data management activities, administration, and supported manuscript writing. Erik van Werkhoven performed formal analysis and validation, was involved in manuscript writing. Henk W. Elzevier performed the conceptualization and supervision, supported manuscript writing. Bas W.G. van Rhijn performed the conceptualization and supervision, supported manuscript writing. Henk G. van der Poel involved in data management activities, performed the conceptualization and supervision, supported manuscript writing. Kees Hendricksen led supervision and conceptualization, supported manuscript writing.

REFERENCES

1. Culp MB, Soerjomataram I, Efstathiou JA, et al. Recent Global Patterns in Prostate Cancer Incidence and Mortality Rates. **Eur Urol 2020;77:38-52.**
2. Prostate Cancer Guidelines. European Association of Urology; Available from, https://uroweb.org/guideline/prostate-cancer/#note_375. Accessed December 1, 2019.
3. Vickers A, Bennette C, Steineck G, et al. Individualized estimation of the benefit of radical prostatectomy from the Scandinavian Prostate Cancer Group randomized trial. **Eur Urol 2012;62:204-209.**
4. Bill-Axelson A, Holmberg L, Garmo H, et al. Radical Prostatectomy or Watchful Waiting in Prostate Cancer - 29-Year Follow-up. **New Engl J Med 2018;379:2319-2329.**
5. Ficarra V, Novara G, Artibani W, et al. Retropubic, laparoscopic, and robot-assisted radical prostatectomy: a systematic review and cumulative analysis of comparative studies. **Eur Urol 2009;55:1037-1063.**
6. Mulhall JP. Defining and reporting erectile function outcomes after radical prostatectomy: challenges and misconceptions. **J Urol 2009;181:462-471.**
7. Whiting PF, Moore TH, Jameson CM, et al. Symptomatic and quality-of-life outcomes after treatment for clinically localised prostate cancer: a systematic review. **BJU Int 2016;118:193-204.**
8. Hedestig O, Sandman PO, Tomic R, et al. Living after radical prostatectomy for localized prostate cancer: a qualitative analysis of patient narratives. **Acta oncologica (Stockholm, Sweden) 2005;44:679-686.**
9. Teloken P, Mesquita G, Montorsi F, et al. Post-radical prostatectomy pharmacological penile rehabilitation: practice

patterns among the international society for sexual medicine practitioners. **J Sex Med 2009;6:2032-2038.**

10. Briganti A, Di Trapani E, Abdollah F, et al. Choosing the best candidates for penile rehabilitation after bilateral nerve-sparing radical prostatectomy. **J Sex Med 2012;9:608-617.**
11. Capogrosso P, Vertosick EA, Benfante NE, et al. Are We Improving Erectile Function Recovery After Radical Prostatectomy? Analysis of Patients Treated over the Last Decade. **Eur Urol 2019;75:221-228.**
12. Huynh LM, Osann K, Skarecky D, et al. Predictive modelling of 2-year potency outcomes using a novel 90-day erection fullness scale after robot-assisted radical prostatectomy. **BJU Int 2018;122:249-254.**
13. Mulhall JP, Kattan MW, Bennett NE, et al. Development of Nomograms to Predict the Recovery of Erectile Function Following Radical Prostatectomy. **J Sex Med 2019;16:1796-1802.**
14. Alenizi AM, Zorn KC, Bienz M, et al. Erectile function recovery after robotic-assisted radical prostatectomy (RARP): long term exhaustive analysis across all preoperative potency categories. **Can J Urol 2016;23:8451-8456.**
15. Garcia FJ, Violette PD, Brock GB, et al. Predictive factors for return of erectile function in robotic radical prostatectomy: case series from a single centre. **Int J impotence Res 2015;27:29-32.**
16. KleinJan GH, Sikorska K, Korne CM, et al. A prediction model relating the extent of intraoperative fascia preservation to erectile dysfunction after nerve-sparing robot-assisted radical prostatectomy. **J robotic Surg 2019;13:455-462.**
17. Salonia A, Adaikan G, Buvat J, et al. Sexual Rehabilitation After Treatment for Prostate Cancer-Part 1: Recommendations From the Fourth International Consultation for Sexual Medicine (ICSM 2015). **J Sex Med 2017;14:285-296.**
18. Rabbani F, Stapleton AM, Kattan MW, et al. Factors predicting recovery of erections after radical prostatectomy. **J Urol 2000;164:1929-1934.**
19. Nelson CJ, Scardino PT, Eastham JA, et al. Back to baseline: erectile function recovery after radical prostatectomy from the patients' perspective. **J Sex Med 2013;10:1636-1643.**
20. Rossi MS, Moschini M, Bianchi M, et al. Erectile Function Recovery After Nerve-Sparing Radical Prostatectomy for Prostate Cancer: Is Back to Baseline Status Enough for Patient Satisfaction? **J Sex Med 2016;13:669-678.**
21. Messaoudi R, Menard J, Ripert T, et al. Erectile dysfunction and sexual health after radical prostatectomy: impact of sexual motivation. **Int J impotence Res 2011;23:81-86.**
22. Frey A, Sonksen J, Jakobsen H, et al. Prevalence and predicting factors for commonly neglected sexual side effects to radical prostatectomies: results from a cross-sectional questionnaire-based study. **J Sex Med 2014;11:2318-2326.**
23. Capogrosso P, Ventimiglia E, Serino A, et al. Orgasmic Dysfunction After Robot-assisted Versus Open Radical Prostatectomy. **Eur Urol 2016;70:223-226.**
24. Bravi CA, Tin A, Montorsi F, et al. Erectile Function and Sexual Satisfaction: The Importance of Asking About Sexual Desire. **J Sex Med 2020;17:349-352.**
25. Aaronson NK, Ahmedzai S, Bergman B, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology. **J Natl Cancer Inst 1993;85:365-376.**
26. Rosen RC, Riley A, Wagner G, et al. The international index of erectile function (IIEF): a multidimensional scale for assessment of erectile dysfunction. **Urology 1997;49:822-830.**
27. Barry MJ, Fowler FJ Jr, O'Leary MP, et al. The American Urological Association symptom index for benign prostatic hyperplasia. The Measurement Committee of the American Urological Association. **J Urol 1992;148:1549-1557 [discussion: 64].**
28. Hajebrahimi S, Nourizadeh D, Hamedani R, et al. Validity and reliability of the International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form and its correlation with urodynamic findings. **Urol J 2012;9:685-690.**
29. Utomo E, Blok BF, Pastoor H, et al. The measurement properties of the five-item International Index of Erectile Function (IIEF-5): a Dutch validation study. **Andrology 2015;3:1154-1159.**
30. Badía X, García-Losa M, Dal-Ré R. Ten-language translation and harmonization of the International Prostate Symptom Score: developing a methodology for multinational clinical trials. **Eur Urol 1997;31:129-140.**
31. Rhoden EL, Teloken C, Sogari PR, et al. The use of the simplified International Index of Erectile Function (IIEF-5) as a diagnostic tool to study the prevalence of erectile dysfunction. **Int J impotence Res 2002;14:245-250.**
32. EORTC QLQ-C30 Scoring Manual, Third Edition. Available at: https://www.eortc.org/app/uploads/sites/2/2018/02/SCmanual.pdf. Accessed December 1, 2020.
33. Alemozaffar M, Regan MM, Cooperberg MR, et al. Prediction of erectile function following treatment for prostate cancer. **Jama 2011;306:1205-1214.**
34. van der Poel HG, de Blok W. Role of extent of fascia preservation and erectile function after robot-assisted laparoscopic prostatectomy. **Urology 2009;73:816-821.**
35. Martin Hald G, Dahl Pind M, Borre M, et al. Scandinavian Prostate Cancer Patients' Sexual Problems and Satisfaction With Their Sex Life Following Anti-Cancer Treatment. **Sex Med 2018;6:210-216.**
36. Dubbelman YD, Wildhagen MF, Dohle GR. Penile vascular evaluation and sexual function before and after radical retropubic prostatectomy: 5-year follow-up. **Int J Androl 2008;31:483-489.**
37. Terrier JE, Masterson M, Mulhall JP, et al. Decrease in Intercourse Satisfaction in Men Who Recover Erections After Radical Prostatectomy. **J Sex Med 2018;15:1133-1139.**

38. Boeri L, Capogrosso P, Ventimiglia E, et al. Depressive Symptoms and Low Sexual Desire after Radical Prostatectomy: Early and Long-Term Outcomes in a Real-Life Setting. **J Urol 2018;199:474-480.**

39. Nelson CJ, Mulhall JP, Roth AJ. The association between erectile dysfunction and depressive symptoms in men treated for prostate cancer. **J Sex Med 2011;8:560-566.**

40. Nicolosi A, Buvat J, Glasser DB, et al. Sexual behaviour, sexual dysfunctions and related help seeking patterns in middle-aged and elderly Europeans: the global study of sexual attitudes and behaviors. **World J Urol 2006;24:423-428.**

41. Badr H, Taylor CL. Sexual dysfunction and spousal communication in couples coping with prostate cancer. **Psychooncology 2009;18:735-746.**

42. Nelson CJ, Deveci S, Stasi J, et al. Sexual bother following radical prostatectomyjsm. **J Sex Med 2010;7(1 Pt 1):129-135.**

43. Fode M, Serefoglu EC, Albersen M, et al. Sexuality Following Radical Prostatectomy: Is Restoration of Erectile Function Enough? **Sex Med Rev 2017;5:110-119.**

44. Warkentin KM, Gray RE, Wassersug RJ. Restoration of satisfying sex for a castrated cancer patient with complete impotence: a case study. **J sex marital Ther 2006;32:389-399.**

SUPPLEMENTARY DATA

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jsxm.2020.11.011.