



## Sexual Medicine

# Baseline Potency in Candidates for Bilateral Nerve-Sparing Radical Retropubic Prostatectomy

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### Abstract

**Objectives:** To assess the baseline erectile function (EF) of patients with clinically localized prostate cancer (pCa), who are candidates for a bilateral nerve-sparing radical retropubic prostatectomy (BNSRRP) to (a) objectively rate the preoperative self-reported subjective patient's EF and (b) investigate possible correlations between preoperative EF and demographic data and comorbidities.

**Materials and methods:** Two-hundred-thirty-four patients, who verbally self-reported they were preoperatively fully potent and strongly motivated to maintain postoperative EF, underwent a BNSRRP. A comprehensive medical and sexual history was obtained on hospital admission the day prior to surgery. Subjectively reported potency rate was compared with the scores of the International Index of Erectile Function (IIEF).

**Results:** The EF domain of the IIEF showed a baseline normal EF in only 43% of the subjects. In contrast, 13% had a mild erectile dysfunction (ED), 8% had a mild to moderate ED, 8% complained of a moderate ED, and as many as 28% reported severe EF impairment. Interestingly, 38% of the patients with severe ED did not attempt any intercourse during the last 4 weeks prior to surgery.

**Conclusions:** A significant proportion of patients with clinically localized pCa and self-reported total potency already had suffered from ED preoperatively. Incorrect timing of questionnaire administration, the potential influence of preoperative patient's psychological distress, and the implication of the patient's partner's psychological and sexual health may be contributing factors to the contradictory finding. The preoperative use of validated questionnaire may help to identify patients who can actually expect to regain potency following a BNSRRP.

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## 1. Introduction

Radical retropubic prostatectomy (RRP) is a widely performed procedure for patients with clinically localized prostate cancer (pCa) and a life expectancy of at least 10 yr [1–6].

This procedure may be associated with treatment-specific sequelae affecting health-related quality of life (HRQoL). The importance of this aspect is increasingly highlighted because the diagnosis of pCa is becoming more frequent in younger patients with a clinically localized tumor, who, therefore, are candidates for a bilateral nerve-sparing procedure.

Although validated and reliable instruments have been developed to assess general and disease-specific HRQoL before and after treatment [7–9], the baseline preoperative overall sexual function has rarely been objectively investigated in detail. Rather, sexual function frequently is rated only by a self-reported assessment of the patient [9]. Therefore, the potential impact of the preoperative potency rate on the postoperative functional outcome of patients undergoing RRP often has been underestimated, and many patients may not receive realistic expectations about postoperative erectile function (EF).

Interestingly, Davison et al. [10] highlighted that the common problems and limitations influencing the reliability of reported postoperative data seem to include the fact that often the degree of sexual function has not been assessed objectively before and after treatment. Moreover, most reports include only a retrospective chart review, and there is a question of accuracy about the data collection. Very recently, however, Karakiewicz et al. reported that the use of recalled HRQoL scores approximated prospective HRQoL scores by a reasonable margin, with the EF and sexual desire domains of the International Index of Erectile Function (IIEF) [11] having the highest reliability, possibly because they address more objective areas of men's sexual function [12].

The aims of this study were to comprehensively assess the baseline sexual function characteristics of patients with clinically localized pCa who were candidates for a bilateral nerve-sparing RRP (BNSRRP) to (1) prospectively report on the preoperative self-reported patient's EF, (2) show the objective baseline rate as documented by a number of international validated questionnaires, and (3) investigate possible correlations between preoperative EF and either demographic data or scoring of general subjective symptoms.

## 2. Materials and methods

On admission at our institution the day before surgery all candidates for RRP for pCa were comprehensively assessed with a detailed medical and sexual history, physical examination, and laboratory tests (including fast glycemia, total testosterone level, and lipids profile). Before surgery, the patients were verbally asked by a physician about their overall sexual function mainly addressing both the issue of preoperative potency, as subjectively reported by the patients themselves, and the eventual intake of any medication for improving EF (ie, How do you rate your overall sexual function during the last 4 wk? How do you rate your potency during the last 4 wk? Have you ever taken any medication for improving your potency?).

To provide a frame of reference for objectively interpreting surgical outcomes, we also asked all patients to complete a preoperative semistructured interview and to fill in a set of validated questionnaires including the IIEF and the Center for Epidemiological Survey Depression Scale (CES-D) [13]. Each preoperative patient chart regarding the IIEF-erectile function (IIEF-EF) domain was analyzed subsequently in detail and segregated according to the diagnostic evaluation criteria reported by Cappelleri et al. [14].

A BNSRRP was performed in all patients with clinically localized pCa, who preoperatively verbally self-reported full sexual potency and had a strong motivation to maintain postoperative EF. Data are presented as mean  $\pm$  standard deviation (SD). Statistical analysis was based on the analysis of variance (ANOVA) for repeated measurements. A 2-tailed Student *t* test for paired and unpaired data was used for direct comparisons. Any relationship among variables was evaluated using either the Spearman correlation analysis or a multivariate regression analysis. For all statistical comparisons, significance was defined as  $p < 0.05$ .

## 3. Results

Between November 2002 and November 2004, 333 men with clinically localized pCa, verbally self-reported to be preoperatively fully potent and strongly motivated to maintain postoperative EF, were considered eligible for BNSRRP. The mean age of selected patients was  $62.4 \pm 6.6$  yr.

Preoperative scores of the various domains of the IIEF were assessed. Ninety-nine (29.7%) of the 333 patients either refused to fill in the questionnaire regarding sexual function or simply provided an incomplete IIEF questionnaire that could not be used for final data analysis; therefore, complete data collection and detailed statistical analyses were available for 234 (70.3%) patients who entered all the statistical analyses of the present study. We did not find any differences in terms of sociodemographic or tumor characteristics between patients providing or not providing a complete set of data.

**Table 1 – Baseline psychometric parameters in pCa patients candidates for BNSRRP**

IIEF	
Erectile-function domain	19.0 ± 10.9
Sexual desire domain	7.1 ± 5.0
Intercourse satisfaction domain	6.7 ± 4.1
Orgasmic function domain	5.3 ± 2.2
Overall satisfaction domain	6.2 ± 2.9
CES-D	13.6 ± 7.2
Results are mean ± SD.	
IIEF = International Index of Erectile Function; CES-D = Center for Epidemiological Survey Depression Scale; pCa = prostate cancer; BNSRRP = bilateral nerve-sparing radical retropubic prostatectomy.	

Table 1 lists the mean ± SD baseline scores for the CES-D and for each domain of the IIEF in this latter group of patients.

An objective detailed analysis segregated the baseline psychometric parameters of these patients according to the IIEF-EF severity criteria reported by Cappelleri et al. (Table 2). Interestingly, 133 (56.8%) of the 234 men verbally self-reporting to be preoperatively fully potent and strongly motivated to maintain postoperative EF showed various degrees of baseline erectile dysfunction (ED). Moreover, 38% (25) of those patients with a preoperative score suggesting severe ED actually did not attempt any intercourse during the last 4 wk before BNSRRP.

The ANOVA demonstrated that, in this cohort of candidates for BNSRRP, the preoperative IIEF-sexual desire score (IIEF-SD) significantly increased

( $F = 30.21$ ;  $p < 0.01$ ) according to the degree of IIEF-EF. Moreover, those patients who did not report any sexual intercourse during the last 4 wk before surgery showed a lower IIEF-SD score than men with at least one sexual attempt before the BNSRRP (ie,  $2.61 \pm 1.37$  versus  $6.15 \pm 2.22$ ;  $p < 0.0001$ ; 95%CI, 2.61–4.48).

A multivariate analysis did not show any significant correlation between the baseline EF domain and the CES-D.

Table 3 lists the nonurologic comorbidities in this cohort of pCa patients. The multivariate regression analysis did not show any significant correlation between the preoperative IIEF-EF score and the patient's age, as well as between the preoperative IIEF-EF and nonurologic comorbidities as independent variables.

#### 4. Discussion

Radical prostatectomy is used worldwide every year to treat a substantial number of men with pCa. The goal of this procedure includes lifelong cancer control while maintaining normal functions that contribute to a satisfactory global QoL after surgery. However, a potential negative impact of RRP on subsequent HRQoL has been reported in several studies [15,16].

The anatomic technique of the radical excision of the prostate was pioneered by Walsh and aimed at preserving continence and potency in adequate candidates [1,2,5,6,17].

**Table 2 – Baseline psychometric evaluation segregated by IIEF-EF severity grouping**

	No. patients	(%)	IIEF-SD	IIEF-IS	IIEF-OF	IIEF-OS	CES-D
Normal erectile function	101/234	43	7.1 ± 2.1	11.2 ± 2.0	9.4 ± 1.8	8.7 ± 1.6	12.3 ± 5.5
Mild ED	31/234	13	6.3 ± 1.4	9.7 ± 2.3	8.6 ± 2.4	7.6 ± 1.6	14.8 ± 7.1
Mild to moderate ED	18/234	8	6.0 ± 2.0	9.0 ± 1.4	7.1 ± 2.2	6.7 ± 1.8	14.4 ± 8.2
Moderate ED	18/234	8	5.2 ± 1.5	5.3 ± 4.3	7.9 ± 2.7	4.9 ± 1.9	16.0 ± 9.4
Severe ED	66/234	28	3.7 ± 2.1	0.7 ± 2.0	1.2 ± 2.4	3.0 ± 1.7	14.0 ± 8.4
IIEF = International Index of Erectile Function; IIEF-SD = IIEF sexual desire score; IIEF-IS = IIEF intercourse satisfaction domain; IIEF-OF = IIEF orgasmic function domain; IIEF-OS = IIEF overall sexual satisfaction domain; CES-D = Epidemiological Survey Depression Scale; EF = erectile function; ED = erectile dysfunction.							

**Table 3 – Nonurologic comorbidities in pCa patients candidates for BNSRRP**

	Diabetes mellitus		Hypertension		CAD	
Normal EF	0/66	0%	22/66	33.3%	5/66	7.6%
Mild ED	1/17	5.9%	5/17	29.4%	2/17	11.8%
Mild to moderate ED	2/9	22.2%	3/9	33.3%	3/9	33.3%
Moderate ED	2/13	15.4%	5/13	38.5%	1/13	7.7%
Severe ED	4/38	10.5%	11/38	29%	5/38	13.2%
Key: pCa = prostate cancer; BNSRRP = bilateral nerve-sparing radical retropubic prostatectomy; CAD = coronary artery disease; EF = erectile function; ED = erectile dysfunction.						

Although numerous nomograms have been developed to support physicians in counseling patients while selecting the appropriate therapy by predicting pathologic features and biochemical recurrence after radical prostatectomy, there are few preoperative data that predict the ultimate postoperative outcome in terms of HRQoL after surgery. Very recently, Hu et al. [18] demonstrated that with the exception of young age, preoperative patient and tumor characteristics did not appear to predict return of general or disease-specific HRQoL. These authors concluded that variables related to surgical technique may be of more importance in the recovery of postoperative QoL.

Results from the current study suggest that 56.8% of those patients preoperatively self-reporting to be fully potent and strongly motivated to maintain postoperative EF actually presented a preoperative objective ED, regardless of any type of comorbidity or baseline demographic data. Moreover, 28% of our cohort of patients objectively showed a severe ED and 38% of the latter group did not attempt any sexual intercourse during the last 4 wk prior to surgery.

We feel that two comments are noteworthy. A significant proportion of patients who are candidates for BNSRRP already were affected preoperatively by ED, and, therefore, they would have a significant reduced probability of recovering a postoperative adequate EF. In addition, approximately 18% of the patients suffering from ED did not report any sexual attempts during the last 4 wk prior to surgery.

Although the IIEF questionnaire evaluates the quality of erectile and sexual function only during the last 4 wk, a period that can have lower or nonexistent frequency for men waiting for surgery and accounts for the more marked ED, we believe that these findings are important in projecting longitudinal prospective studies aimed at assessing RRP functional outcomes and in interpreting retrospectively surgical results.

The high prevalence of severe ED reported during the last 4 wk in our cohort of patients appeared statistically independent of several comorbidities (eg, diabetes mellitus, hypertension, and coronary artery disease) as well as age. The lack of a validated index able to measure and classify prognostic comorbidity actually represents a major limitation of this study. However, these data may be significant in light of several pieces of science emphasizing that comorbidity with one or more vascular risk factors may increase the risk of postoperative functional impairment [19] or, in addition, that the efficacy of phosphodiesterase type 5 inhibitors (PDE5-Is) after radical prostatectomy correlates with the degree of

neurovascular bundle preservation, and thus, with the high quality of the surgery, as well as with the preoperative EF status and with the patient's age [20–23].

Although the generally accepted explanation is that men are less reluctant to reveal ED and other impairment in intimate body function when responding to a questionnaire than when speaking directly to their physicians, we cannot exclude that the high prevalence of both preoperative ED and sexual inactivity rate in this particular cohort of patients may depend on only an incorrect timing of the administration of the set of questionnaires (eg, IIEF and CES-D). We hypothesize that a two-step administration of these questionnaires should be considered, with the specific aim to assess the sexual data before the diagnosis of pCa or right after the diagnosis (thus, chronologically really distant from the RRP) and immediately prior to the surgery itself.

We have investigated the prevalence of depression among our patients by means of the CES-D. Interestingly, we did not find a significant correlation between the rate of mood deflection and the IIEF-EF in both patients reporting at least a preoperative sexual attempt and patients not having any sexual intercourse during the last 4 wk before surgery. We hypothesize that the lack of a significant correlation between the IIEF-EF and the depression rate would be due to the relatively modest levels of depression in this population.

However, a potential limitation of our study may be the lack of a tool dedicated to the assessment of psychological distress, because this psychological parameter is potentially directly causal to the overall underestimation of preoperative potency. Indeed, despite significant increases in treatment effectiveness, the diagnosis and treatment of cancer remain one of the most emotionally distressing events in medical care [24]. Zabora et al. [25], for instance, reported that in the United States, patients with breast cancer had the highest levels of distress, depression, and anxiety followed by patients with colorectal and prostate cancer, respectively.

Interestingly, in our study, a multivariate analysis showed that preoperative IIEF-EF was significantly correlated with the overall quality of preoperative sexual function. Moreover, higher sexual desire scores seemed to be strongly correlated with better EF scores with the ANOVA. All these data may reinforce the hypothesis that a period of emotional distress may have a strong and possibly negative impact on the results of all our questionnaires.

Potential limitations of the present analysis include the lack of a specific preoperative tool to evaluate psychological distress in patients with pCa,



as previously discussed, but also the fact that the study was dedicated to only the preoperative evaluation of the patient's overall sexual function and did not show the potential implication of the distress of the patient's partner induced by the cancer diagnosis. Patients and their partners can suffer from clinical levels of depression and severe levels of anxiety and stress reactions because they must adapt to the shock and uncertainty that such a diagnosis presents [26]. Studies of heterosexual couples have also reported significant correlations between the patient's and the partner's distress, depression, and anxiety [26]. Raveis et al. [27], for instance, showed that the time since diagnosis may be significantly associated with the psychological adjustment of both patient and relatives, but this finding is quite controversial [26].

## 5. Conclusions

A significant proportion of patients with clinically localized pCa who are candidates for a BNSRRP and self-report full potency actually are found to have ED when assessed with questionnaires, regardless of several well-known potential ED risk factors. A sub-cohort of them, moreover, did not attempt any sexual intercourse during the last month before surgery. These findings might significantly affect the post-operative quality of erections and the response to PDE5-Is. Therefore, we hypothesize that the traditional preoperative sexual history may not provide an adequate evaluation of the characteristics of these patients. An objective baseline evaluation of the patient's sexual health should include the use of validated questionnaires. However, the correct timing of questionnaire administration should be critically analyzed. Moreover, the role of preoperative medical comorbidities seems to be poorly understood. The potential influence of preoperative psychological distress in these patients and the possible implication of the patient's partner's sexual health and psychological distress induced by the cancer diagnosis also need further research.

Although we did not analyze a different subset of patients, we believe that what has been observed for RRP can probably be applied to any treatment for localized pCa such as brachytherapy or external beam radiotherapy.

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