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ONCOLOGY

# Decrease in Intercourse Satisfaction in Men Who Recover Erections After Radical Prostatectomy

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## ABSTRACT

**Introduction:** Recovery of erections after radical prostatectomy (RP) is assumed to lead to recovery in sexual satisfaction. Although data suggest a relationship between sexual function and sexual satisfaction, it is unclear whether presurgical levels of sexual satisfaction are attained for men who "recover" erections post-RP.

**Aim:** The goal of this analysis is to determine whether the recovery of erectile function restores presurgical levels of sexual satisfaction.

**Methods:** We assessed 229 men pre-RP and 24-months post-RP. At both time points, participants completed the Erectile Function Domain (EFD) and the Intercourse Satisfaction Domain (ISD) of the International Index of Erectile Function (IIEF). Erectile function recovery at 24 months was defined as (1) (EFD$\geq$24) or (2) EFD back to baseline (BTB). One hundred sixty-six men with penetration hardness erections (PHEs) at baseline (EFD $>$24) were included in the analyses. Repeated measure *t*-tests were used to compare changes in ISD scores and effect size (Cohen's d) was calculated to determine the clinical significance of these changes. Multivariable analyses (MVA) were used to test the relationship between EFD and ISD.

**Results:** The mean age of men was 58 (SD = 7) years. The mean EFD score at baseline was 29 (SD = 2), which declined significantly to 20 (SD = 10) at 24 months. ISD also decreased significantly between baseline and 24 months (12 to 8.3, $P < .001$, d = 0.87), even among men with PHEs at 24 months (12.3 to 11.3, $P < .001$, d = 0.50) and men who achieved BTB erections at 24 months (12.4 to 11.7, $P = .02$, d = 0.35). For men with PHEs at 24 months, MVAs identified baseline ISD (beta = 0.46) and 24-month EFD (beta = 0.23) as the only significant predictors of 24-month ISD. However, among men who achieved BTB erections at 24 months, baseline ISD (beta = 0.49) was the only significant predictor of 24-month ISD.

**Clinical Implications:** These findings underscore the importance of the integration of psychological support and medical care to best meet the needs of patients. Furthermore, these results can be used to facilitate pre-RP communication and counseling with patients to improve understanding and manage post-RP expectations.

**Strengths & Limitations:** The study methodology, specifically the use of BTB as a means of defining erectile function and the longitudinal, prospective study design are relative strengths. Despite the longitudinal design, the study did not include a control group of healthy, age-matched men.

**Conclusion:** Results highlight the enduring impact of sexual dysfunction, namely erectile dysfunction, on intercourse satisfaction following RP and suggest that restoration of function in and of itself does not ensure the restoration of satisfaction. **Terrier JE, Masterson M, Mulhall JP, et al. Decrease in intercourse satisfaction in men who recover erections after radical prostatectomy. J Sex Med 2018;XX:XXX–XXX.**



**Key Words:** Erectile Dysfunction; Prostatectomy; Prostate Cancer; Erectile Function; International Index of Erectile Function; Intercourse Satisfaction

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## INTRODUCTION

Prostate cancer is the most frequently diagnosed solid tumor in men in the United States.[1] Approximately 1 in 7 men will be diagnosed with prostate cancer during his lifetime and more than 160,000 new cases are estimated to be diagnosed in the United States in 2017.[2] 90% of men diagnosed with prostate cancer are

diagnosed with early-stage disease and have excellent 5-, 10-, and 15-year survival rates (99%, 91%, and 82%, respectively).[3] Radical prostatectomy (RP) is a gold-standard treatment for early and localized prostate cancer[4]; however, RP carries significant sexual side effects.[5] The vast majority of men who undergo RP experience some level of erectile dysfunction (ED),[5] and only 16% of men will regain their presurgical level of erectile functioning.[6,7]

A growing body of research has focused on the psychological impact of these sexual side effects post-RP. This research demonstrates the deleterious impact of post-RP changes in bodily and sexual function (ie, urinary incontinence, ED) on psychosocial functioning among these men. Specifically, ED among men post-RP has been associated with increased worry, anxiety, distress, depressive symptoms, and sexual bother.[4–8] Furthermore, research suggests that ED, post-RP, may be particularly threatening to the masculine identity. Several qualitative studies have underscored this phenomenon in which men report feeling like changed men because of the changes in their sex life and experience subsequent lowered self-esteem and diminished intimate relations with their partners.[8] Furthermore, the impact of ED and its associated psychosocial consequences extend beyond the patient, impacting their partners and the relationship as a whole.[9] Thus the association between ED and compromised quality of life is now well established.[10–13] This association highlights the importance of addressing sexual dysfunction as a survivorship issue for men following treatment for prostate cancer.

For men following RP, the loss of erectile function and its accompanying psychological impact, often lead to a decrease in sexual satisfaction. Research suggests that the successful treatment of ED leads to an increase in sexual satisfaction.[14,15] Hence, recovery of erections is thought to prompt psychosocial recovery, including a return to presurgical levels of sexual satisfaction. However, both physical and psychological aspects are integral in helping prostate cancer patients and survivors restore sexual satisfaction.[16] For instance, in a study of 352 men with prostate cancer, Nelson et al[16] found that erectile functioning, relationship closeness, anxiety, and depression were all significant predictors of sexual satisfaction. Additionally, clinical experience suggests that the emotional and relationship difficulties related to ED do not always resolve with the return of erectile function, and as a result, sexual satisfaction may not return to baseline levels even when sexual functioning improves.

Rossi et al[17] explored the question of return of overall sexual satisfaction in 652 men post-RP and reported that reaching one's baseline IIEF Erectile Function Domain (EFD) category does not guarantee the return of overall satisfaction. However, these authors also reported that for men who achieved good erectile functioning (defined as EFD >22), post-RP, considered themselves satisfied.[17] The goal of our analysis in this article is to question the assumption that the recovery of "good" erectile function and recovery of sexual satisfaction occur simultaneously. We explore this question with a different methodology as compared to Rossi et al and as a result we hope to add to the literature exploring this question. Rossi et al[17] used a relatively high cutoff of Overall Sexual Satisfaction Domain (OSSD) of the IIEF as the definition of "sexually satisfied" and did not consider baseline OSSD. In our methodology, we limit our analyses to those who have good erectile function prior to surgery and examine the IIEF Intercourse Satisfaction Domain (ISD), which measures more directly men's satisfaction with intercourse as compared to the IIEF OSSD. We also examine if men achieve back to their baseline intercourse satisfaction as opposed to using a cutoff score for satisfaction. One concern when using a cutoff score is that results may change depending on the cutoff score selected. We also believe assessing back to baseline ISD is a more sensitive assessment compared to a cutoff score, which could potentially lead to different results. We hypothesize that the return of "good" erectile function does not necessitate a return to baseline sexual satisfaction among men post-RP.

## METHOD

### Patient Population

This study is part of a larger prospective quality-of-life study conducted with early-stage prostate cancer patients at a large Northeast medical center. The study was approved by the Institutional Review Board and complied with the ICH Good Clinical Practice Guidelines founded on the Declaration of Helsinki. English-speaking men diagnosed with localized, untreated prostate cancer, undergoing an RP were eligible for study participation. Patients were recruited consecutively in outpatient clinics prior to RP, between December 2003 and June 2006. Interested, eligible patients provided informed consent, provided demographic information, and completed the Prostate-Health Related Quality-of-Life Questionnaire.[18] In addition to demographic information, a nerve-sparing score (NSS) and vascular risk factors (VRFs) were assessed for each patient. The NSS was graded during surgery; the 4-point NSS assigned to each nerve were as follow: 1 = fully preserved; 2 = partially preserved; 3 = minimally preserved; and 4 = resected (total score range = 2 to 8). The VRFs assessed included hypertension, hypercholesterolemia, diabetes mellitus, coronary artery disease, and cigarette smoking.

The subjects completed questionnaires before surgery (baseline) and then every 3 months for 2 years after surgery. Patients who completed the 24-month assessment were included in this study, and only the baseline and 24-month assessments were used in this analysis. The 24-month data point was selected because this is considered the time point where most nerve healing has occurred and the end point of erectile function recovery after RP.[19] Those subjects who had radiation or adjuvant hormone therapy within 24 months post-RP were excluded from this analysis.

### Outcome Measures

The Prostate-Health Related Quality-of-Life Questionnaire is a psychometrically validated, patient self-report questionnaire which contains 63 disease-specific items. The instrument assesses