ELSEVIER

Urologic Oncology: Seminars and Original Investigations ▮ (2017) ▮▮▮–▮▮▮

UROLOGIC ONCOLOGY

Original article

# Concordance between patient-reported and physician-reported sexual function after radical prostatectomy

Alan E. Thong, M.D., M.P.H.[a], Bing Ying Poon, B.A.[b], Justin K. Lee, M.D., M.P.H.[a], Emily Vertosick, M.P.H.[b], Daniel D. Sjoberg, M.A.[b], Andrew J. Vickers, Ph.D.[b,c], Behfar Ehdaie, M.D., M.P.H.[a,b,c,*]

[a] *Department of Surgery, Urology Service, Memorial Sloan Kettering Cancer Center, New York, NY*
[b] *Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York, NY*
[c] *Weill Cornell Medical College, New York, NY*

Received 16 March 2017; received in revised form 15 August 2017; accepted 18 September 2017

## Abstract

**Purpose:** Accurately tracking health-related quality-of-life after radical prostatectomy is critical to counseling patients and improving technique. Physicians consistently overestimate functional recovery. We measured concordance between surgeon-assessed and patient-reported outcomes and evaluated a novel method to provide feedback to surgeons.

**Materials and methods:** Men treated with radical prostatectomy self-completed the International Index of Erectile Function-6 questionnaire at each postoperative visit. Separately, physicians graded sexual function on a 5-point scale. International Index of Erectile Function -6 score $<22$ and grade $\geq 3$ defined patient-reported and physician-assessed erectile dysfunction (ED), respectively. Feedback on concordance was given to physicians starting in May 2013 with the implementation of the Amplio feedback system. Chi-square tests were used to assess agreement proportions and linear regression to evaluate changes in agreement after implementation.

**Results:** From 2009 to 2015, 3,053 men completed at least 1 postprostatectomy questionnaire and had a concurrent independent physician-reported outcome. Prior to implementation of feedback in 2013, patients and physicians were consistent as to ED 83% of the time; in 10% of cases, physicians overestimated function; in 7% of cases, physicians, but not patients reported ED. Agreement increased after implementation of feedback but this was not statistically significant, likely owing to a ceiling effect. Supporting this hypothesis, increase in agreement postfeedback was greater during late follow-up ($\geq$12 mo), where baseline agreement was lower compared to earlier follow-up.

**Conclusions:** Agreement was higher than expected at baseline; implementation of feedback regarding discrepancies between patient-reported and physician-assessed outcomes did not further improve agreement significantly. Our observed high rate of agreement may be partly attributed to our institutional practice of systematically capturing patient-reported outcomes as part of normal clinical care. 

*Keywords:* Prostatectomy; Outcomes; Questionnaires

## 1. Introduction

Treatment of localized prostate cancer with radical prostatectomy (RP) carries risks of functional impairment in urinary and sexual health-related quality-of-life (HRQOL) [1]. Patient-reported outcomes (PRO) are now critical components of clinical trials used to direct patient-centered care [2]. Providing PRO to individual surgeons helps them to counsel patients, improve surgical technique, and guide follow-up care decisions.

Systematic assessment of PRO is still lacking, however, though the American Urological Association guidelines for localized prostate cancer recommend an assessment of overall health and functional status to guide treatment and follow-up care [3], assessment of patient functional status

*Funding*: Supported by funds from David H. Koch provided through the Prostate Cancer Foundation, Sidney Kimmel Center for Prostate and Urologic Cancers, P50-CA92629 National Cancer Institute SPORE Grant, P30-CA008748 National Institutes of Health cancer center support Grant, and T32 CA82088-15 National Cancer Institute training Grant.

* Corresponding author: Tel.: +646-422-4406; fax: +646-888-2595.
*E-mail address:* ehdaieb@mskcc.org (B. Ehdaie).

http://dx.doi.org/10.1016/j.urolonc.2017.09.017
1078-1439/

has historically been sparse. In the Cancer of the Prostate Strategic Urological Research Endeavor (CaPSURE) and American College of Surgeons National Cancer Data Base cohorts, 22% to 64% of men had no documented assessment of urinary or sexual functional status [4,5].

Even when physicians do assess and document patient functional status, research has demonstrated that physicians' reports are often discordant with patient experience. For instance, in 1 study, surgeon and patient sexual function assessments were concordant for only 55% of patients [5]. These discordant physician assessments consistently underestimate the functional limitations that men experience across multiple domains before and after prostate cancer treatment [6].

Increasing awareness of the importance of PRO assessment in routine clinical care has failed to increase agreement between physician- and patient-assessed functional status. In separate reports from the CaPSURE cohort that were over a decade apart, there was no temporal convergence in the agreement of patient- and physician-reported outcomes [7]. We hypothesized that actively providing surgeons with systematic feedback as to their patients' self-reported sexual function outcomes would improve the concordance between patient- and physician-reported outcomes.

## 2. Materials and methods

### 2.1. Amplio feedback system

Starting January 2009, PRO were systematically collected as part of routine clinical care at Memorial Sloan Kettering Cancer Center (MSKCC). Patients with prostate cancer prospectively completed a validated HRQOL questionnaire assessing erectile, urinary, and bowel function as well as global quality-of-life before RP and at regular follow-up intervals [8]. The survey was administered using an interactive secure online form completed before clinical appointments via e-mail or immediately before the clinical appointment via tablet computer. A total of 6 questions from the International Index of Erectile Function-6 comprised the patient self-assessment of potency [9]. During the clinical visit also, physicians independently graded sexual function on a 5-point scale based on history and physical examination.

This routine digital collection of PRO then served as a critical component of the Amplio feedback system [10]. Beginning in May 2013, the Amplio system provided surgeons at MSKCC with biannual individualized and confidential feedback on PRO. Amplio is an interactive information technology platform developed to provide physicians across various surgical disciplines with feedback on their risk-adjusted outcomes and anonymized peer comparisons. In the case of RP, one of the metrics the Amplio system reports back to surgeons is the concordance of potency rates between patient-reported and surgeon-assessed outcomes. The overall results are presented at surgical staff meetings, with individual surgeons encouraged to log-on and view their personal results. Log-ons are monitored, with a designated surgeon serving the role of liaison, to encourage use of the feedback tool.

### 2.2. Study cohort

After obtaining Institutional Review Board approval, we used our institutional database to identify 4,330 men who had undergone RP at MSKCC from January 2009 to April 2015. In order to compare sexual function agreement between surgeons and patients over follow-up, we omitted 1,277 men who did not have at least 1 HRQOL survey completed at the same follow-up time point by both the patient and the surgeon. Of the resulting cohort of 3,053 men, 2.359 underwent RP before Amplio concordance feedback (before May 2013) and 694 underwent RP after implementation of Amplio concordance feedback.

Patients were considered sexually potent if they self-reported a score of at least 22 points on the International Index of Erectile Function-6 (range: 1−30). Surgeons were considered to have rated their patients as potent if they reported a score of 2 or less on the 5-point erectile dysfunction (ED) survey (Supplemental material 1). If both patient and surgeon rated the patient as being potent or if they both rated the patient as having ED, this was considered agreement. Cases where the surgeon reported potency and the patient-reported ED were considered to be cases of overestimation on the part of the surgeon. Cases where the surgeon reported ED and the patient-reported potency were considered underestimation by the surgeon.

### 2.3. Statistical analysis

The chi-square test was used to assess the overall agreement between the surgeon and the patient on sexual function outcomes. To describe the level of agreement for all patient-surgeon interactions throughout follow-up, we calculated the proportion of times surgeons and patients agreed and the proportion of times surgeons overestimated sexual function.

To evaluate any changes in agreement and overestimation that resulted once the Amplio system feedback was part of the process, we used a general estimating equation with logit link to compare those surveys taken before feedback was available on May 15, 2013 and those taken after November 15, 2013. A general estimating equation was used because each patient-surgeon interaction throughout follow-up was included in the analyses, so we had to account for correlation within each patient-surgeon pair and across follow-up times. Surveys taken from May 15, 2013 to November 15, 2013 were not included in the analyses to allow for an adjustment period.

Linear regression was also used to determine the change in mean agreement and overestimation over follow-up for