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Original article

Detailed analysis of patient-reported lower urinary tract symptoms and effect on quality of life after robotic radical prostatectomy

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Abstract

Objective: To prospectively evaluate short- to medium-term patient-reported lower urinary tract symptoms (LUTS) and their effect on health-related quality of life (HRQoL) using validated questionnaires in a large cohort of patients following robotic-assisted radical prostatectomy (RARP) for prostate cancer.

Materials and methods: HRQoL and LUTS outcomes were prospectively assessed in 357 consecutive men undergoing RARP at a single center from 2012 to 2015 using the functional assessment of cancer therapy—prostate (FACT-P) and the international consultation on incontinence modular questionnaire—male LUTS (ICIQ-MLUTS). Questionnaires were administered at baseline, 6, 12, and 18 months. Data were analyzed using paired *t*-tests and ANOVA.

Results: Questionnaire completion rates were high (over 60% of eligible men completed 18-month follow-up). Mean Total FACT-P did not significantly change after RARP: 125.95 (standard deviation [SD] = 19.82) at baseline and 125.86 (SD = 21.14) at 18-months ($P = 0.55$). Mean total ICIQ-MLUTS also remained unchanged: 18.69 (SD = 10.70) at baseline and 18.76 (SD = 11.33) at 18-months ($P = 0.11$). Mean voiding score significantly reduced from 10.34 (SD = 5.78) at baseline to 6.33 (SD = 3.99) at 6 months after RARP ($P < 0.001$). A reciprocal significant increase in storage score was observed: 5.34 (SD = 4.26) at baseline, 9.65 (SD = 5.71) at 6 months ($P < 0.001$). Subanalyses of ICIQ-MLUTS scores revealed increases in storage symptoms were exclusively within urinary incontinence domains and included significant increases in both urge and stress urinary incontinence scores.

Conclusion: Overall, patient-reported outcome measures evaluating HRQoL and LUTS do not significantly change after RARP. Detailed analysis reveals significant changes within LUTS domains do occur after surgery which could be overlooked if only total LUTS scores are reported.

Keywords: Robotic radical prostatectomy; Prostate cancer; Quality of life; Lower urinary tract symptoms

1. Introduction

Robotic-assisted radical prostatectomy (RARP) is a minimally invasive technique, which has become the standard of care in many institutions worldwide for the primary surgical treatment of localized prostate cancer (PCa). Men's expectations of oncological and functional outcomes after radical prostatectomy are reported to have increased since the introduction of RARP [1,2]. Additionally, men are actively seeking more accessible patient-centered information about PCa treatments, their associated side effects and the potential impact of treatment on quality of life to better inform their treatment decisions [3].

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The evaluation of lower urinary tract function to date after RARP has almost exclusively concentrated on postoperative continence rates with limited information available regarding other potentially bothersome urinary symptoms [4]. Only a minority of reports document individual lower urinary tract symptoms (LUTS) before and after radical prostatectomy even though LUTS are acknowledged to have a significant effect on overall well-being and are often the reason men present for prostate investigation [5–8].

This highlights the need for a detailed analysis of patient-reported LUTS outcomes after RARP and their effect on overall health-related quality of life (HRQoL) related to baseline status. This study aimed to fill this evidence gap and investigate the impact of RARP on storage, voiding and postmicturition LUTS using the validated International Consultation on Incontinence Modular Questionnaire—Male Lower Urinary Tract Symptoms Long Form (ICIQ-MLUTS) and to correlate these findings with overall and symptom specific HRQoL indices.

2. Materials and methods

2.1. Participants

Between July 2012 and September 2015, all men with localized PCa, undergoing RARP at a single center serving a population of 1.2 million people were included. RARP was performed by 3 surgeons at the institution. All patients were invited to complete written validated patient-reported outcome measures (as is standard practice) at baseline (i.e., after diagnosis but before undergoing RARP), at 6, 12, and 18 months after RARP. Patient-reported outcomes were the primary outcome measure in this analysis. Secondary outcome measures included the relative internal consistency of the instruments used and a planned subgroup analysis of patient-reported outcomes by median age.

2.2. Patient-reported outcome measures

Men were administered the functional assessment of cancer therapy—prostate (FACT-P) [9], the ICIQ-MLUTS [10] and the international index of erectile function-5 (IIEF-5) [11] written questionnaires at each prespecified time point.

2.3. FACT-P

FACT-P is a 39-item questionnaire consisting of 5 domains: “physical well-being,” “social/family well-being,” “emotional well-being,” “functional well-being” and “items specifically related to PCa treatment.” Each item can be answered on a 5 point Likert scale (0 = not at all; 1 = a little bit; 2 = somewhat, 3 = quite a bit, and 4 = very much). A subscale score can be generated for each domain. The sum of all the scores from the 5 domains makes up the total FACT-P score. Scores for the whole questionnaire range between 0 and a maximum of 156. The higher the score the better the quality of life. Cronbach’s α for FACT-P total has been reported as 0.87 to 0.89 indicating excellent internal consistency [9].

2.4. ICIQ-MLUTS

ICIQ-MLUTS questionnaire is a 23-item questionnaire for evaluating male lower urinary tract symptoms and effect on quality of life. Questionnaire items address storage, voiding, and postmicturition symptoms in detail. The overall score ranges from 1 to a maximum of 84 with higher scores indicating worse symptom severity. Bother scales are not incorporated in the overall score but illustrate the impact of individual symptoms for the patient. Cronbach’s α of 0.82 for storage, 0.85 for voiding and 0.91 for the basic set of problem questions indicate excellent internal consistency [10].

2.5. IIEF-5

IIEF-5 is a 5-item questionnaire designed to diagnose the presence and severity of erectile dysfunction. Each item is scored from 1 to 5 or 0 to 5 and the sum of all the items makes up the total IIEF-5 score that can range from 1 to 25. Patients with a total score less than 21 are likely to have evidence of erectile dysfunction. The lower the score the more severe the erectile dysfunction [11].

2.6. Study design

Questionnaires were administered and collected independently of the operating surgeons by the urology research team at our institution. Patients who did not return follow-up questionnaires, were sent a single reminder letter with another set of questionnaires enclosed and a stamped-addressed envelope for return. If men did not return the questionnaires after this no further reminders were sent for that time point. However further questionnaires were sent at the next time point. All patients self-completed the questionnaires.

2.7. Statistical analysis

Men who had completed baseline questionnaire data and at least one other postoperative set of questionnaires were included. Men who did not complete baseline questionnaires or who failed to return any follow-up questionnaires were excluded from data analysis. Questionnaire score calculations were performed in accordance with the published questionnaire protocol. Likewise missing data was treated in accordance with the questionnaire protocols [9–11]. Data analysis were carried out using SPSS version 16.0. The data were checked for distribution using visual