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The Impact of Implementation of the European Association of Urology Guidelines Panel Recommendations on Reporting and Grading Complications on Perioperative Outcomes after Robot-assisted Radical Prostatectomy

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Abstract

The rate of postoperative complications might vary according to the method used to collect perioperative data. We aimed at assessing the impact of the prospective implementation of the European Association of Urology (EAU) guidelines on reporting and grading of complications in prostate cancer patients undergoing robot-assisted radical prostatectomy (RARP). From September 2016, an integrated method for reporting surgical morbidity based on the EAU guidelines was implemented at a single, tertiary center. Perioperative data were prospectively and systematically collected during a patient interview at 30 d after surgery as recommended by the EAU Guidelines Panel Recommendations on Reporting and Grading Complications. The rate and grading of complications of 167 patients who underwent RARP ± pelvic lymph node dissection (PLND) after the implementation of the prospective collection system (Group 1) were compared with 316 patients treated between January 2015 and August 2016 (Group 2) when a system based on patient chart review was used. No differences were observed in disease characteristics and PLND between the two groups (all $p \geq 0.1$). Postoperative complications were graded according to the Clavien-Dindo classification system. Overall, the complication rate was higher when the prospective collection system based on the EAU guidelines was used (29%) than when retrospective chart review (10%; $p < 0.001$) was used. In particular, a substantially higher rate of grade 1 (8.4% vs 4.7%) and 2 (14% vs 2.8%) complications was detected in Group 1 versus Group 2 ($p < 0.001$). Although the rate of complications occurred during hospitalization did not differ (13% vs 10%; $p = 0.3$), 31 (19%) complications after discharge were detected in Group 1. This resulted into a readmission rate of 16%. Conversely, no complications after discharge and readmissions were recorded for Group 2. The implementation of the EAU guidelines on reporting perioperative outcomes roughly doubled the complication rate after RARP and allowed for the detection of complications after discharge in more than 15% of patients that would have been otherwise missed, where patients assessed with the EAU implemented protocol had a threefold higher likelihood of reporting complications.

Patient summary: The implementation of the European Association of Urology guidelines on reporting and grading of complications after urologic procedures in prostate cancer patients roughly doubled the complication rate after robot-assisted radical prostatectomy compared to retrospective patient chart review. Moreover, it allowed for the detection of complications after discharge in more than 15% of patients that would have been otherwise missed.

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Perioperative outcomes (ie, morbidity and mortality) after surgical procedures represent well-established proxies of quality of care [1]. When considering localized prostate cancer (PCa), the rate of postoperative complications after robot-assisted radical prostatectomy (RARP) ranges between 3% and 40% and varies according to patient characteristics, technique, and surgical experience [2,3]. Nonetheless, heterogeneity in the definition of complications and assessment tools might in part explain such a huge variability in reported outcomes, where the adoption of standardized definitions and data collection systems would allow for a better characterization of surgical results, comparison of surgeons or techniques, and preoperative counseling [3–6]. The EAU guideline panel recently released ad hoc recommendations on reporting and grading of complications after urologic procedures [7]. We aimed to assess the impact of the prospective implementation of these guidelines on the rate of postoperative complication in a large contemporary cohort of PCa patients undergoing RARP at a tertiary center.

After institutional review board approval, 500 patients with clinically localized PCa who underwent RARP ± extended PLND (ePLND) between January 2015 and September 2017 at a single center were identified. All surgical procedures were performed by three surgeons with at least 100 cases at the beginning of data collection using the same technique to limit potential biases related to the learning curve phenomenon [8,9]. From September 2016, a prospective collection system for perioperative outcomes based on patient interview done by medical doctors at 30 d after surgery was implemented. The quality criteria for accurate and comprehensive reporting of surgical outcomes recommended by the EAU guidelines on reporting and grading of complications were fulfilled (Table 1) [5,7]. Overall, 17 (3.4%) patients treated after the implementation of the prospective collecting system did not complete the interview at 30 d and were excluded from our analyses. This resulted in a final population of 483 patients. The rate and grading of complications of 167 consecutive patients who underwent RARP after the implementation of the prospective collection system (Group 1) were compared with 316 patients treated between January 2015 and August 2016 when a collection system based on patient chart review done by two dedicated data managers was used (Group 2). In the latter group, only events occurred during the hospital stay at the treating institution were collected. Postoperative complications were graded according to the Clavien-Dindo classification system [10]. The Mann-Whitney test was used to assess differences in the distribution of continuous variables between the two groups. The chi-square test was used to compare the differences in proportions between the two groups. Multivariable logistic regression analyses were used to assess the impact of the implementation of the EAU guidelines on the probability of detecting postoperative complications after adjusting for potential confounders.

Median age at surgery was 64.5 yr. Overall, 82 (17%), 283 (59%), and 118 (24%) patients had low-, intermediate-, and high-risk disease, respectively. Of all men, 356 (73%) received ePLND. No differences were observed in baseline disease characteristics, pathologic features, and the use of ePLND between the two groups (all $p \geq 0.1$; Supplementary Table 1). No significant differences in baseline variables were detected between patients included and those excluded from the final cohort ($p \geq 0.1$). Median blood loss and length of stay were 150 ml and 3 d, respectively, and did not differ between the two groups (Table 2). Median operative time was 175 min and 185 min for patients in Groups 1 and 2, respectively ($p = 0.02$). Overall, 81 (17%) patients experienced postoperative complications. The

Table 1 – Quality criteria for accurate and comprehensive reporting of surgical outcome and their implementation to collect postoperative complications in prostate cancer patients treated with robot-assisted radical prostatectomy at a single, tertiary referral center

	Criteria	Implementation
1	Define the method of accruing data	Prospective data collection based on a patient interview conducted by telephone
2	Define who collected the data	Data were collected by medical doctors who were not involved in the treatment
3	Indicate the duration of follow-up	30 d
4	Include outpatient information	Outpatient information were collected
5	Include mortality data and causes of death	Mortality data were collected
6	Include definitions of complications	Surgical complications were defined as any deviation from the ideal postoperative course that is not inherent in the procedure and does not comprise a failure to cure
7	Define procedure-specific complications	Procedure-specific complications were defined and collected
8	Report intraoperative and postoperative complications separately	Intraoperative and postoperative complications were considered separately
9	Use a severity grading system for postoperative complications	The Clavien-Dindo system was used
10	Postoperative complications should be presented in a table either by grade or by complication type	Postoperative complications were graded according to the Clavien-Dindo system and presented in a table
11	Include risk factors	The Charlson comorbidity index was prospectively collected for all patients
12	Include readmissions and cause	Data on readmissions were specifically collected
13	Include re-operations, types, and causes	Data on re-operations were collected
14	Include the percentage of patients lost to follow-up	17 (3.4%) patients had incomplete information on 30-d complications and were excluded from the current analysis

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