

Surgeon skill is associated with positive surgical margins in robot-assisted partial nephrectomy: Results of a video-based evaluation

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INTRODUCTION AND OBJECTIVE: There is growing interest in understanding clinical implications of surgeon proficiency levels for complex procedures such as robot-assisted partial nephrectomy (RAPN). We conducted a peer surgeon video review exercise to determine if surgeon scores representing technical skills in RAPN are associated with patient outcomes.

METHODS: From July 2021 to September 2022, 11 experienced surgeons participating in a statewide quality improvement collaborative (MUSIC) submitted 1 to 7 videos of themselves performing RAPN. Videos were segmented into six key steps of the procedure, yielding 127 video clips. Video clips were deidentified and distributed to 24 blinded peer reviewer surgeons who also perform RAPN. Each clip was reviewed by at least 3 reviewers. Reviewers provided written feedback and rated technical skill using a published evaluation tool: Scoring for Partial Nephrectomy (SPaN), 1=lowest and 5=highest. Outcomes from the MUSIC registry for all submitting surgeons were assessed for length of stay (LOS), estimated blood loss (EBL)>500, warm ischemia time (WIT) >30 min, positive surgical margin (PSM), and readmission. Logistic regression using clinical factors generated risk adjusted outcomes that were correlated with scores representing surgeon skills. Score cards and written comments were provided to all participants. Participant survey results were collected 2 months after video review.

RESULTS: 383 total reviews were performed by 24 reviewers over 6 months. The average score for reviewed clips was 4.2, ranging between 3.5 and 4.7. Greater technical skill, represented by overall score, correlated with lower rates of PSM ($p=0.038$) (Figure). Specifically, higher scores in the clamping and tumor resection step were correlated with lower rates of PSM ($p=0.041$). Surveys indicated submitters and reviewers found the process and score card valuable for identifying areas of improvement, learning different RPN techniques, and educating trainees.

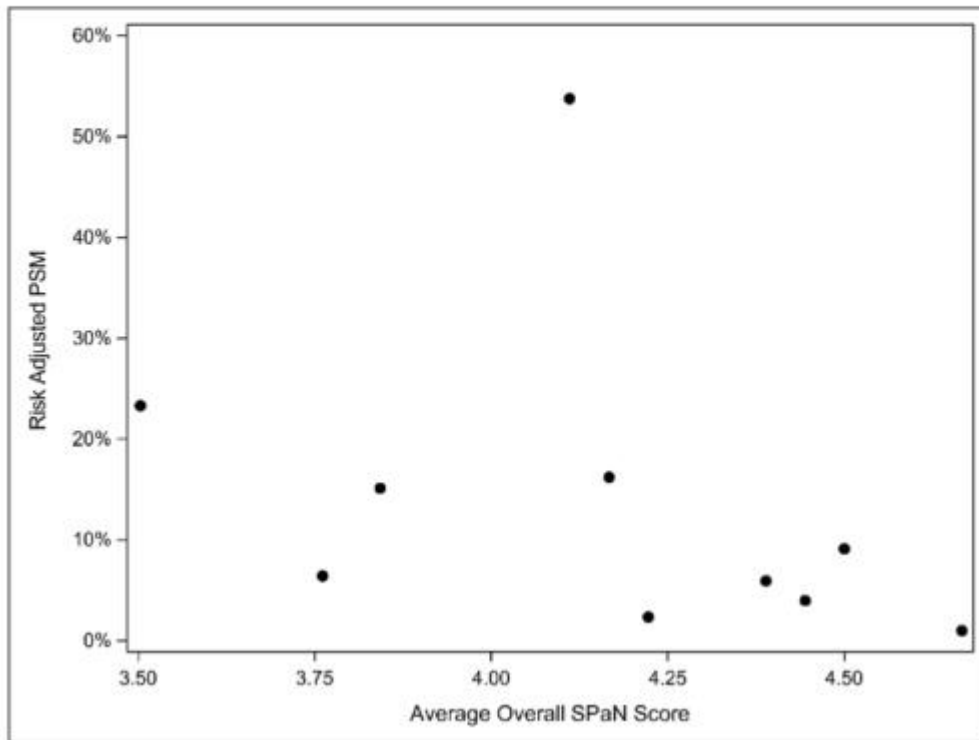
CONCLUSIONS: Video review demonstrated that higher technical skill with RAPN was associated with lower frequency of PSM. These findings suggest that video-based peer evaluation plays a role in assessing surgical skill and could be used in quality improvement initiatives to improve patient care and oncologic outcomes.

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Figure. The association between surgeon scores and risk adjusted PSM rates. Each dot in the scatterplot represents 1 out of 10 practicing urologic surgeons.

Spearman correlation coefficient = -0.66

p-value = 0.038



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