

Surgical skill and patient outcomes after robot-assisted radical prostatectomy

James O. Peabody*, Detroit, MI, Rodney L. Dunn, Andrew Brachulis, Tae Kim, Susan Linsell, Ann Arbor, MI, Brian R. Lane, Grand Rapids, MI, Richard Sarle, Dearborn, MI, James Montie, David C. Miller, Khurshid R. Ghani, for the Michigan Urological Surgery Improvement Collaborative, Ann Arbor, MI

INTRODUCTION AND OBJECTIVES: The empirical relationship of surgical skill on patient outcomes after robotic surgery is unknown. In the Michigan Urological Surgery Improvement Collaborative (MUSIC), we assessed the association between peer review of technical skill and short-term operative outcomes following robot-assisted radical prostatectomy (RARP).

METHODS: Surgeons performing RARP in MUSIC were invited to submit a representative video of a nerve-sparing procedure. Edited video clips of the vesico-urethral anastomosis from 29 surgeons underwent blinded review by 56 peer surgeons for global robotic skill using the Global Evaluative Assessment of Robotic Skills (GEARS) tool (maximum score 25) using a custom-designed web-based secure registry. Each surgeon underwent video review by at least 9 peer surgeon reviewers. Surgeons were ranked on GEARS scores and sorted into quartiles of skill. Using a mixed logistic regression model adjusted for surgeon as a random effect, we then assessed the relationship between the highest (Q4) and lowest (Q1) skill quartiles and risk-adjusted peri-operative complication rates at the patient level using data from a prospective registry involving 2,256 patients.

RESULTS: Compared to surgeons in the lowest 25% (Q1) of skill ratings, surgeons in the top 25% (Q4) for skill had lower rates of excess blood loss (>400 cc) (OR=0.47, p=0.01), and less events of urethral catheter replacement after its removal (OR=0.62, p=0.07) (Figure). There were no differences between Q1 and Q4 performance quartiles when comparing readmission rates (OR=1.16, p=0.58) or prolonged urethral catheter (>16 days) duration outcomes (OR=1.41, p=0.27).

CONCLUSIONS: The technical skill of practicing robotic surgeons performing the anastomosis during RARP varied widely, and better skill was associated with superior results for selective patient outcomes. Future work will need to study the relationship between skill and long-term patient reported outcomes to determine if quality improvement initiatives focused on surgical skill lead to improved patient care.

Source of Funding: Blue Cross Blue Shield of Michigan

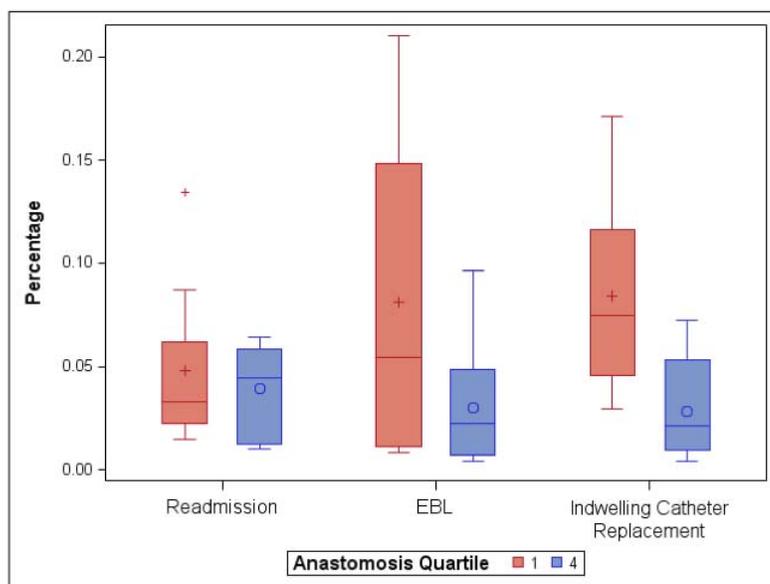


Figure. Risk-Adjusted Rates of Readmission, Excess Blood Loss (EBL) >400 cc, and Urethral Catheter Replacement after RARP, According to Quartile of Surgical Skill (Q1 – lowest 25%, Q4 – highest 25%)