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Patient selection and outcomes between low and high volume surgeons in performance of radical prostatectomy in the Michigan Urological Surgery Improvement Collaborative (MUSIC)

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INTRODUCTION AND OBJECTIVES: In Michigan, the American Cancer Society estimates 5350 newly diagnosed prostate cancer (PCa) cases a year. Radical prostatectomy (RP) is commonly used to treat localized PCa. By comparing lower (<10 RPs per year) and higher (>10 RPs per year) volume surgeons, we aim to discern variation in patient selection and surgeon technique to identify avenues to improve functional outcomes.

METHODS: The Michigan Urological Surgery Improvement Collaborative (MUSIC), a statewide quality improvement consortium of >250 diverse MI urologists, uses a web-based data registry to collect information regarding a patient's RP. In April 2014, MUSIC began a patient reported outcomes (PRO) program. RP patients completed validated surveys pre- and 3, 6, 12, and 24 months post-RP, and a goal was set to increase the social continence (0-1 pads per day) rate at 3-months post-RP. In this study, bivariate tests compared patient characteristics between lower and higher volume surgeons, and a mixed-effects logistic regression model determined the independent effect of volume on 3-month social continence.

RESULTS: The analysis included 2704 patients treated by 108 RP surgeons (48 lower volume surgeons completing 202 RPs and 60 higher volume surgeons completing 2502 RPs). The social continence rate 3 months post-RP was 56% and 67% (p<0.001) for lower and higher volume surgeons, respectively. Lower volume surgeons were less likely to perform bilateral nerve sparing (46% vs 70%, p<0.001) and their patients had higher preoperative PSA (median 6.7 vs. 6.0, p=0.036). Other factors (BMI, race, clinical T stage, age) were not significantly different between volume groups. Higher volume surgeons' patients were more likely to reach social continence at 3 months post-RP (OR=1.81, p=0.006, Table).

CONCLUSIONS: RP for localized PCa is a complex operation, and these data provide further evidence that all RP surgeons should participate in PRO. MUSIC PRO provides a framework to identify surgeon characteristics or techniques that may be useful in improving functional outcomes through activities such as skills workshops, video review, and mentoring.

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Table. Factors associated with achieving social continence at 3-month post RP

Variable	OR	95% CI	*p*
High volume (vs. low volume surgeon)	1.81	(1.18, 2.78)	0.006
Age (in 5 years)	0.75	(0.70, 0.81)	<0.001
Baseline UIN (in 10 units)	1.15	(1.08, 1.23)	<0.001
Preoperative PSA (logarithm)	0.88	(0.77, 1.01)	0.068
BMI			
<25		-Reference-	
[25,30)	0.89	(0.68, 1.16)	0.391
[30,35)	0.66	(0.49, 0.88)	0.005
>=35	0.66	(0.46, 0.94)	0.020
Diabetes	0.66	(0.50, 0.88)	0.004
Race			
White		-Reference-	
African American	0.96	(0.69, 1.33)	0.784
Other race	0.68	(0.35, 1.31)	0.243
Biopsy Gleason score			
6		-Reference-	
7	1.15	(0.90, 1.47)	0.273
>=8	0.79	(0.57, 1.09)	0.155
T2a or above (vs T1c or less)	0.86	(0.70, 1.07)	0.170
Bilateral nerve sparing (vs. not)	0.97	(0.77, 1.21)	0.773

Note: also adjusted for surgeon through random effects.