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BACKGROUND

Since the first robot-assisted laparoscopic prostatectomy (RALP) in 2000, the technique has quickly become the standard of care over traditional open surgery and pure laparoscopic surgery.¹⁻³ Patient outcomes were analyzed to better understand the benefits of RALP compared to its predecessors

OBJECTIVES

To understand the difference in key patient outcomes among robot-assisted vs. non-robotic prostatectomy and to assess if the frequency of procedure type differs by patient demographics and insurance payor type

METHODS

- Using a large, de-identified US electronic health record database (Cerner Real-World Data), we extracted data for all patients who underwent a non-robotic or robot-assisted radical prostatectomy between April 2012 and January 2017, using ICD-9-CMS, ICD-10-PCS, and Current Procedural Terminology (CPT) codes
- Procedures coded as “open prostatectomy”, “prostatectomy endoscopic approach”, and “prostatectomy” were included in the non-robot group. Procedures coded as “robotic assisted” or “robotic assistance” were included in the robotic group.

METHODS Cont’d

- Differences in 5-year mortality, biochemical cancer recurrence (based on prostate-specific antigen levels), urinary tract infection (UTI), and 90-day readmission in robotic vs. non-robotic radical prostatectomy among patients with prostate cancer
- Two sample proportion and chi-squared tests were used to assess statistical significance between predictor and outcome variables
- Logistic regression was used to model binary outcomes (e.g. 5-year mortality); odds ratios were used to assess predictor association with outcomes

RESULTS

- Out of 1,500 patients who underwent radical prostatectomies, 1,268 (85%) underwent a non-robotic prostatectomy, while 232 (15%) had a robot-assisted procedure. Both groups had similar patient demographics (**Table 1**)
- Patients who underwent a robot-assisted prostatectomy were 1.2 times more likely to be alive after 5 years (P-value: 0.003) (**Figure 1**)
- There was no significant difference between non-robotic and robotic prostatectomy for biochemical cancer recurrence, UTI, and 90-day readmission

CONCLUSIONS

- Robot-assisted prostatectomy resulted in a 20% better chance of 5-year survival after surgery as compared to non-robotic prostatectomy
- Given that there was no difference in biochemical recurrence of prostate cancer, further studies are warranted to explain the increase in 5-year survival for the robot-assisted prostatectomy group
- The results of this study suggest that RALPs may have survival benefits, however, further analyses should be performed with larger and more-balanced datasets to determine the impact of RALP on patient survival and other key outcomes

REFERENCES

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TABLE 1. Patient Characteristics

Characteristics	Non-Robotic Prostatectomy (N = 1,268)	Robot-Assisted Prostatectomy (N = 232)
Age (in years)		
Mean ± SD	66.0 ± 9.0	66.0 ± 9.0
Race		
White	980 (77.3%)	184 (79.3%)
Black	95 (7.5%)	23 (9.9%)
Other*	76 (6.0%)	13 (5.6%)
Not Specified	117 (9.2%)	10 (4.3%)
Region		
Northeast	418 (33.0%)	68 (29.3%)
Midwest	467 (36.8%)	90 (38.8%)
South	66 (5.2%)	13 (5.6%)
West	317 (25.0%)	61 (26.3%)
Payer		
Medicaid	65 (5.1%)	8 (3.5%)
Medicare	533 (42.0%)	110 (47.4%)
Private/ Commercial	482 (38.0%)	84 (39.6%)
Other*	35 (2.8%)	9 (4.3%)
Not Specified	153 (12.1%)	21 (9.9%)

* Includes those who identify as American Indian, Hispanic, Asian, Mixed race, Pacific Islander, or Alaska Native
** Includes Self-pay, workers’ compensation, and government-associated payers

FIGURE 1. Predictor Association with Five-Year Mortality

