Readmission and unplanned healthcare use after radical cystectomy are independent of discharge destination

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ABSTRACT

Introduction: Our primary purpose was studying utilization rates of home nursing assistance (HNA) and skilled nursing facility (SNF) placement after radical cystectomy (RC) and evaluating if their use was associated with emergency department (ED) visits, hospital readmissions, or mortality. Secondarily, we evaluated if patient socioeconomic status was associated with these factors following RC.

Methods: Patients who underwent RC for bladder cancer were retrospectively analyzed. Discharge destination was labeled as home, HNA, or SNF. The incidence of ED visits was recorded at 30 and 90 days after discharge from surgical admission. Readmissions were tracked similarly. Area Deprivation Index (ADI) was collected on

KEY MESSAGES

- Rates of readmission and use of emergency department resources after radical cystectomy appear independent of discharge destination.
- A greater area deprivation index score may correlate with an increased likelihood of readmission after radical cystectomy.
- Discharge to home is associated with a lower mortality rate after surgery and discharge to skilled nursing facility is associated with worse cancer-specific survival.

each patient and organized in quartiles (ADIQ), with worsening socioeconomic status as ADIQ increased.
Results: A total of 215 patients were discharged home, 148 to HNA and 25 to SNF. ED visits and readmissions after RC at the 30- and 90-day marks did not differ based on discharge destination ($p>0.05$). Home patients had a lower incidence of death after RC compared to HNA and SNF ($p=0.037$), but not overall survival time ($p=0.572$). Readmission to the hospital after 30 days of discharge was more likely as ADIQ increased ($p=0.017$). Discharge destination, ED visits, and readmission after 90 days of discharge from RC was not different based on patient ADIQ ($p>0.05$).
Conclusions: Discharge to home after RC is associated with lower mortality rates. Rates of readmission and use of ED resources appear independent of discharge destination. A greater ADIQ may interact with likelihood of admission post-RC. Future efforts remain warranted to address disparities in postoperative management in the pursuit of health equity in urology.

INTRODUCTION

Radical cystectomy (RC) is the gold standard for definitive treatment of muscle invasive bladder cancer but affords high morbidity and mortality. Literature highlights rates of postoperative complication near 50% within three months [1], and approximately 15% are Clavien-Dindo grade IIIa or greater [2]. Moreover, 30-day readmission rates are reportedly 25% [3]. This poses a major economic burden to both the healthcare system and patients. Consequently, providers may hesitate to offer RC to those presumably at increased risk of complications resulting from inadequate post-discharge resources, and patients may be reluctant to undergo surgery due to financial toxicity associated with resource procurement.

Healthcare initiatives to reduce readmissions and emergency department (ED) visits after major surgery have been extensively reported [4,5]. Destination upon discharge has been used as a metric for national hospital rankings [6]. Home nursing assistance (HNA) and stays within skilled nursing facilities (SNF) have associated financial burden. Some have purported that discharge destination affects readmission rates following RC [7,8]. If true, this would have implications for optimization of healthcare system expenditures and patient outcomes. Moreover, the importance of understanding health equity for vulnerable patient populations, including patients from lower socioeconomic backgrounds, has become increasingly clear. Groups have previously published on the effect of patient socioeconomic status on outcomes after RC, finding greater perioperative complication rates among those of lower echelons [9].

The primary aim of this project was to determine the utilization rates of HNA and SNF placement after RC and to evaluate if their use was associated with unplanned ED visits, hospital readmissions, and/or mortality. Our secondary aim was to evaluate if patient socioeconomic

status was associated with discharge destination, unplanned ED visits, readmission, and mortality following RC.

METHODS

Following institutional review board approval (IRB00100649) we performed a retrospective analysis of all patients who underwent RC for bladder cancer between 2012-2023 at our institution. Any patients who underwent partial cystectomy or RC for an indication other than bladder cancer were excluded. Patients who died in the hospital during their initial surgical admission were also excluded. A variety of demographic and cancer-specific variables were recorded including patient age at surgery, marital status, Charlson Comorbidity Index (CCI), body mass index (BMI), length of stay (LOS), discharge destination, cancer stage, postoperative complications, ED visits, hospital readmission rates, overall survival, and cancer-specific survival. The Area Deprivation Index (ADI) was also obtained on each patient and patients were evaluated based on their ADI score [10]. Discharge destination was labeled as either home, HNA, or SNF and was determined by evaluation of a physical therapy team during initial hospital stay. HNA involved comprehensive home nursing care like vital sign checks, assistance with activities of daily living, pain control, laboratory blood draws (when deemed necessary), and instructions/assistance in urostomy care. Physical therapy evaluation involved daily visits by at least one licensed physical therapist for a minimum of 1 hour per day to patients while admitted postoperatively from RC in the hospital. Assessment by physical therapists included various tests and exercises of strength, mobility, and range of motion such as standing from a seated position, walking (both assisted and unassisted), and bodily stretches. It was physical therapies final assessment that ultimately decided discharge disposition and not pre-planning before surgery. Complications during initial hospital stay prior to discharge were recorded. The incidence of ED visits was recorded up to 90-days after discharge from the initial surgical admission, including reason for presentation. Readmissions and the associated reasons for them were also tracked at 30- and 90-days after discharge. Local hospital readmissions/ED visits not at our main institution were also counted as an ED visit/readmission if it was found in the medical record.

Statistical analysis was done using IBM SPSS Statistics Version 28 (Armonk, NY). Analysis of variance was run to compare continuous variables between the three discharge destinations to assess for differences between home, HNA, and SNF. Chi-squared test was run to compare categorical variables between the discharge destinations to examine differences between home, HNA, and SNF. ADI was organized into quartiles based on patient national decile score, with increasing disadvantage as both national decile score and quartile increased. Three patients were excluded from analysis here as they had no ADI score available. A Kaplan-Meier survival plot was made for overall rate of death postoperatively between the discharge destinations.

RESULTS

388 patients were included in the study. There were 136 (35%) complications postoperatively before discharge. At the time of discharge, 215 (55%) patients were discharged home, 148 (38%) to HNA, and 25 (6%) to SNF. Patients with an open approach to RC were more likely to be

discharged home relative to HNA and SNF patients (p=0.012). There was a trend towards more open and less robotic surgery over time in the study cohort (Figure 1). Conduit type did not differ by discharge destination (p=0.087). Complications after surgery during initial hospital stay were significantly more likely in SNF patients (p=0.025). Patient demographics did not vary between groups, as shown in Table 1. Baseline CCI was similar among the three discharge destinations (p=0.571). LOS post-RC was also the same (p=0.557).

No difference was detected in the incidence of, or reasons for presenting to the ED at 30- or 90- days postoperatively based on discharge destination (p>0.05). Readmissions to the hospital at both 30- and 90- days postoperatively also did not differ by discharge destination (p>0.05). The reason for readmission at both 30-days and 90-days post-RC was not significantly different by discharge destination (p>0.05). Readmission to the hospital at 30- and 90- days did not differ based on patient marital status (p=0.103; p=0.137) or if they had children (p=0.627; p=0.701).

Median overall survival and cancer-specific survival after initial discharge from the hospital were similar based on discharge destination (p>0.05), but overall incidence of death postoperatively did vary by discharge destination (p=0.037). Specifically, patients discharged to HNA were 1.7 times as likely to die compared to home patients (Table 2). Median patient follow-up after discharge was equivalent between home, HNA, and SNF (p=0.276). Figure 2 expresses the difference in overall survival (p=0.448) and cancer-specific survival (p<0.001) by discharge disposition on Kaplan-Meier survival curves with log-rank test.

The median ADI national decile score was 72 (interquartile range: 57-82). Discharge destination was not different based on ADI quartile (Table 3; p=0.271). ED visits within 90-days of RC were also similar across ADI quartiles (p=0.304). Readmission to the hospital at 30-days from discharge was significantly more likely as ADI quartile increased (p=0.017). 90-day readmission rates were not different based on ADI quartile (p=0.979). Overall survival (p=0.707) and cancer-specific survival (p=0.680) had no significant interaction with patient ADI quartile (Table 3).

DISCUSSION

We evaluated the effect of discharge destination after RC on a large series of patients at our institution, finding no significant difference in the rate of ED visits or readmissions. Similarly, no difference was seen in the reasons underpinning these forms of unplanned healthcare utilization at both 30- and 90-days after discharge. SNF patients had the greatest rate of immediate postoperative complications, but this is unsurprising as patients recommended for skilled rehabilitation often have complex hospital stays. Nevertheless, the majority of Clavien complications were grade I or II for SNF patients after surgery. One may expect there to be a greater proportion of high grade Clavien complications (≥IIIa) for SNF patients, but it is established that most complications after RC are low grade, and the high grade complications often occur after discharge from the hospital rather than during initial admission for surgery [11].

Thus, if immediate postoperative complications after RC do affect discharge destination, complication frequency, rather than grade, likely drives this.

Our findings are of clinical significance as others have claimed discharge destination influences readmission rates. Rosenzweig et al. published that discharge to SNF after RC was associated with a ~50% higher likelihood of readmission at both 30- and 90- days after RC [8]. It is important to recognize that the study design of this paper was different from our own and used a database spanning multiple states and hospitals to track readmission rates. Our analysis coming from a single state and institution, despite being high-volume, could account for some of the differences in results. Both Minnillo et al. and Hu et al. found that when compared to going home or having HNA, patients discharged to a facility after RC were more likely to be readmitted [3,12]. Kirk et al. also found differences in readmission by discharge destination after RC, but that it was not SNF and, rather, HNA that demonstrated the greatest likelihood [13]. Nevertheless, Aghazaeh et al., using a study methodology like ours, published that discharge to home, HNA, or a facility post-RC had no significant effect on readmission [14]. Further, Cacciamani et al. found discharge disposition had no effect on 90-day readmission after RC [15]. Rathbun et al. published on 30-day readmission rates after RC, and saw no significant difference based on discharge disposition [16]. Unlike much of the previously published data, our study analyzed specific reasons for readmission. No significant interaction was seen between reason for readmission and discharge destination. While our work did not track LOS during readmission, Skolarus et al. found a longer LOS during readmission after RC was associated with initial discharge to a SNF [17]. We feel our study highlights that the interaction of discharge destination and readmission after RC is more nuanced than previously thought.

Although our investigation did not collect cost data, it remains a critical consideration for national healthcare. For HNA, average monthly cost is approximately $5,625 across the United States [18]. Cost varies by state, but across the country the median daily SNF price is $275 and $7650 per month [19]. Further, approximately 30% of all patients sent to a SNF will have a long-term care need prolonging stay [19]. Medicare patients have the first 20 days of SNF stay covered, but days 21-100 require out-of-pocket expenses of $194.50 per day and all costs after day 100 [20]. Medicaid patients tend to have their SNF costs covered, but this varies based on asset worth for each patient [21]. Considering our analysis of equivalent outcomes between home, HNA, and SNF, and that home discharge is the cheapest disposition, it is another reason to think critically before sending a patient to HNA or SNF after RC.

Most prior studies examining discharge destination after RC did not capture ED visits. This is a significant limitation in the current literature, and a focus of our analysis. Overutilization of the ED can be a drain on the healthcare system and costly to patients. We found no significant interactions between discharge destination and ED visits or the reason for those visits. This paralleled our finding of an absent relationship between discharge destination and readmission rates. Although the body of research on this topic is sparse when looking specifically at RC patients, other surgical specialties have found discharge to HNA may decrease

the likelihood of postoperative ED visits [22]. Further research into the rates and reasons for postsurgical utilization of ED resources, especially following operations with considerable morbidity, is warranted.

In this study, overall survival after RC did not differ by discharge destination. The death rate (as a percentage) among discharge destination groups, however, was different and patients discharged to home had the lowest value. This seems to reflect the numerical differences of patients in each grouping. On logistic regression, HNA patients were 1.7 times as likely to die as home patients. The clinical significance of this is unknown since the overall survival time was similar among all three groups. Aghazaeh et al. found 90-day mortality rates after RC were greatest following discharge to facilities rather than to home [14]. Similarly, Cacciamani et al. reported discharge to facility was associated with greater 30- and 90-day mortality after RC compared to home discharge [23]. Despite overall survival similarity, using the log-rank test on Kaplan-Meier survival analysis, cancer-specific survival differed by discharge destination, with SNF patients having the lowest time in our study. This is not unexpected given that patients with complications are often discharged to SNFs, and thus potentially more likely to succumb to their cancer sooner. Current evidence is mixed on mortality and discharge disposition, but a potential highlight of our study compared to previous work is the inclusion of the rate of both overall and cancer-specific survival, and not just incidence of death. Ultimately, there may be a difference in likelihood of dying after RC depending on where patients are sent after surgery, but it is difficult to draw further conclusions from this as there is likely selection bias in sicker patients' discharge destination after RC.

A greater ADI quartile correlated with likelihood of readmission within 30-days of RC. Knorr et al. studied the effect of ADI in a series of 906 RC patients finding it was associated with increased 90-day mortality [24]. The authors of this study saw no association with readmission to the hospital after discharge though. They also noted worse overall survival based on ADI quartile, whereas we did not see any association with overall survival nor cancer-specific survival. Our 30-day finding of increased readmission with greater ADI quartile is in line with established literature, as it has been shown most complications after RC occur within 2 weeks of surgery and 20% of all readmissions within 3-days of discharge [13,25]. ADI quartile was not associated with likelihood of ED visitation in our study, but it appears that early readmission is. The causes of this remain unclear, but a lack of patient resources and economic disadvantage, which is linked with a higher deprivation score, may play a role.

Strengths of our analysis include the large sample size of over 300 patients and the inclusion of ED visits. Moreover, we tracked specific reasons for both ED utilization and readmission, which had been previously absent within the reviewed literature. It is unknown if there is a publication bias toward studies noting positive associations, as most previously published reports noted significant associations with site of discharge. While there was a trend towards more open surgery over time, it has been shown that postoperative complications and readmission are not affected by operative approach [26,27]. Additionally, while our analysis

comes from a healthcare system based in the United States, it has external application to healthcare systems outside of it. For instance, HNA and SNFs with similar services to those seen in the United States are also offered after surgeries in Canada [28]. Although this is a 'negative' study in the sense of noting dissimilar findings, we believe it to be of value. Multiple limitations, however, are worth acknowledging. The retrospective nature of our design relies upon chart review and the assumption that the information in the electronic medical record is correct. There is also significant selection bias in our sample in that sicker patients were more likely to receive more intense care, namely being discharged to HNA or SNF. Our finding of a lower overall death rate in home patients also has limits to its conclusions being that these patients likely needed less postoperative assistance/disease interventions such as intensive chemotherapy relative to HNA and SNF. Care pathways and management choices also may have changed over time in the study, and this effect on the outcomes in our analysis cannot be fully accounted for. Additionally, it is possible that patients may have presented to outside locations for ED care or readmission and that this was not captured. Further, while physical therapy evaluated each patient who was discharged to HNA or SNF, there were no set criteria for discharge destination employed. In addition, identification of modifiers that could potentially reduce discharge to HNA or SNF would be useful, but this study did not directly analyze this question. ADI is not a perfect measure of socioeconomic status which relies heavily on census block. Lastly, we did not assess the effect of housing distance from our institution as a potential confounder for ED visitation/readmission.

CONCLUSIONS

Discharge to home after RC is associated with lower mortality but not greater survival times. Patients sent to a SNF after RC also have shorter cancer-specific survival times. Rates of readmission and utilization of ED resources appear independent of discharge destination. Further work is necessary to determine if overall patient morbidity can explain differences in mortality, with relevance to future decision-making and cost of care following initial hospital discharge. Modifiers that reduce discharge to HNA and SNF will be important to also study while doing this research. Readmission to the hospital within 30-days of discharge was more likely as ADI quartile increased. ADI has been linked to negative outcomes after RC, but our finding with 30-day readmission is novel. In the early period after discharge, socioeconomic disadvantage appears to negatively interact with healthcare utilization, but we also showed no difference in emergency room visits and 90-day readmissions, which argues against a commonly held notion that socioeconomically disadvantaged patients disproportionately strain the healthcare system after major surgery. Future efforts remain warranted to address disparities in postoperative management in the pursuit of health equity in urology.

REFERENCES

1. Novara G, De Marco V, Aragona M, et al. Complications and mortality after radical cystectomy for bladder transitional cell cancer. *J Urol* 2009;182:914-22. https://doi.org/10.1016/j.juro.2009.05.032
2. Katsimperis S, Tzelves L, Tandogdu Z, et al. Complications after radical cystectomy: A systematic review and meta-analysis of randomized controlled trials with a meta-regression analysis. *Eur Urol Focus* 2023;9:920-9. https://doi.org/10.1016/j.euf.2023.05.002
3. Hu M, Jacobs BL, Montgomery JS, et al. Sharpening the focus on causes and timing of readmission after radical cystectomy for bladder cancer. *Cancer* 2014;120:1409-16. https://doi.org/10.1002/cncr.28586
4. Baack Kukreja J, Kamat AM. Strategies to minimize readmission rates following major urologic surgery. *Ther Adv Urol* 2017;9:111-9. https://doi.org/10.1177/1756287217701699
5. Witherspoon L, Breau RH, Langley C, et al. Returning to the emergency room: An analysis of emergency encounters following urological outpatient surgery. *Can Urol Assoc J* 2021;15:333-8. https://doi.org/10.5489/cuaj.7063
6. Reineck L, Pike F, Le T, et al. Hospital factors associated with discharge bias in intensive care unit performance measurement. *Crit Care Med* 2014;42:1055-64. https://doi.org/10.1097/CCM.0000000000000132
7. Kumar RA, Asanad K, Miranda G, et al. Population-based assessment of determining predictors for discharge disposition in patients with bladder cancer undergoing radical cystectomy. *Cancers (Basel)* 2022;14:4613. https://doi.org/10.3390/cancers14194613
8. Rosenzweig SJ, Pfail JL, Katims AB, et al. The impact of discharge location on outcomes following radical cystectomy. *Urol Oncol* 2022;40:63.e1-63.e8. https://doi.org/10.1016/j.urolonc.2021.07.020
9. Golombos DM, O'Malley P, Lewicki P, et al. The impact of socioeconomic status on perioperative complications and oncologic outcomes in patients undergoing radical cystectomy. *World J Urol* 2017;35:1063-1071. https://doi.org/10.1007/s00345-016-1972-6
10. Area Deprivation Index. Center for Health Disparities Research - University of Wisconsin.
11. Maibom SL, Joensen UN, Poulsen AM, et al. Short-term morbidity and mortality following radical cystectomy: A systematic review. *BMJ Open* 2021;11:e043266. https://doi.org/10.1136/bmjopen-2020-043266
12. Minnillo BJ, Maurice MJ, Schiltz N, et al. Few modifiable factors predict readmission following radical cystectomy. *Can Urol Assoc J* 2015;9(7-8):E439-E446. https://doi.org/10.5489/cuaj.2793
13. Kirk PS, Skolarus TA, Jacobs BL, et al. Characterising 'bounce-back' readmissions after radical cystectomy. *BJU Int* 2019;124:955-961. https://doi.org/10.1111/bju.14874
14. Aghazadeh MA, Barocas DA, Salem S, et al. Determining factors for hospital discharge status after radical cystectomy in a large contemporary cohort. *J Urol* 2011;185:85-9. https://doi.org/10.1016/j.juro.2010.08.016

15. Cacciamani GE, Medina L, Lin-Brande M, et al. Timing, patterns and predictors of 90-day readmission rate after robotic radical cystectomy. *J Urol* 2021;205:491-499. https://doi.org/10.1097/JU.0000000000001387
16. Rathbun JR, Ge B, Mehr DR, et al. Readmission after radical cystectomy based on discharge destination. *J Am Coll Surg* 2019;229:S322. https://doi.org/10.1016/j.jamcollsurg.2019.08.704
17. Skolarus TA, Jacobs BL, Schroeck FR, et al. Understanding hospital readmission intensity after radical cystectomy. *J Urol* 2015;193:1500-6. https://doi.org/10.1016/j.juro.2014.10.107
18. What is home care and how much does it cost? 2024.
19. Carlson R. Skilled nursing facility: Services and costs. Smart Asset. 2021.
20. Medicare's 100 days explained. Burner Prudenti Law. 2022.
21. Brady Cobin Law Group. Does Medicaid pay for skilled nursing facilities in North Carolina? 2023.
22. De Mestral C, Kayssi A, Al-Omran M, et al. Home care nursing after elective vascular surgery: An opportunity to reduce emergency department visits and hospital readmission. *BMJ Qual Saf* 2019;28:901-7. https://doi.org/10.1136/bmjqs-2018-009161
23. Cacciamani GE, Lee RS, Sanford DI, et al. Impact of patient, surgical, and perioperative factors on discharge disposition after radical cystectomy. *Cancers (Basel)* 2022;14:209-13:5288. https://doi.org/10.3390/cancers14215288
24. Knorr JM, Campbell RA, Cockrum J, et al. Neighborhood socioeconomic disadvantage associated with increased 90-day mortality following radical cystectomy. *Urology* 2022;163:177-184. https://doi.org/10.1016/j.urology.2021.10.048
25. Sood A, Kachroo N, Abdollah F, et al. An evaluation of the timing of surgical complications following radical cystectomy: Data from the American College of Surgeons National Surgical Quality Improvement Program. *Urology* 2017;103:91-8. https://doi.org/10.1016/j.urology.2017.01.036
26. Borza T, Jacobs BL, Montgomery JS, et al. No differences in population-based readmissions after open and robotic-assisted radical cystectomy: Implications for post-discharge care. *Urology* 2017;104:77-83. https://doi.org/10.1016/j.urology.2017.01.042
27. Bochner BH, Dalbagni G, Sjoberg DD, et al. Comparing open radical cystectomy and robot-assisted laparoscopic radical cystectomy: A randomized clinical trial. *Eur Urol* 2015;67:1042-50. https://doi.org/10.1016/j.eururo.2014.11.043
28. Barber BV, Gregg E, Drake E, et al. Transitional care programs for older adults moving from hospital to home in Canada: A systematic review of text and opinion. *PLoS One* 2024;19:e0307306. https://doi.org/10.1371/journal.pone.0307306

FIGURES AND TABLES

Figure 1. Changes in approach by year in the study window. Each dot represents the total number of surgeries each year.

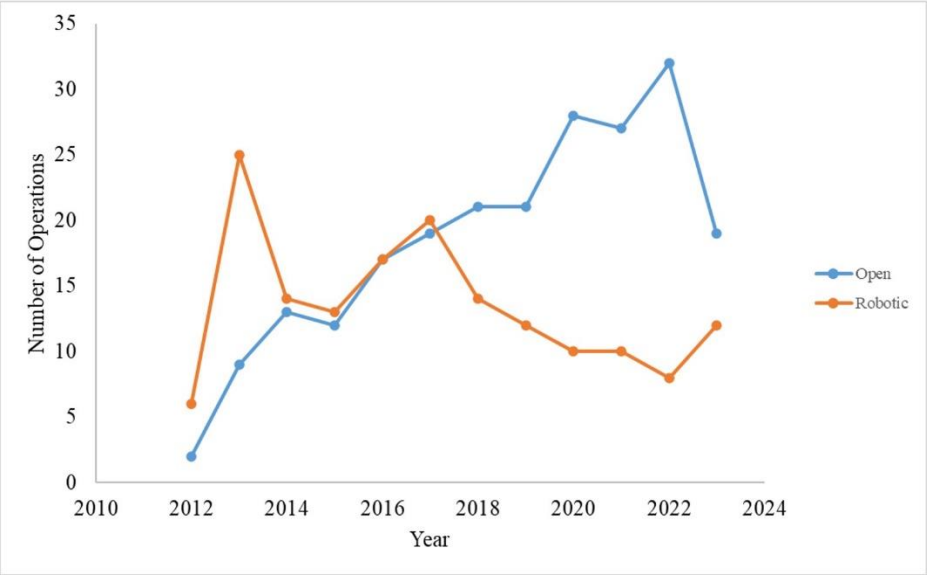

Figure 2. Kaplan-Meier survival curves for (A) overall survival after initial hospital discharge for radical cystectomy based on discharge location (home, home with nursing assistance [HNA], and skilled nursing facility [SNF]); and (B) cancer-specific survival. Using the log-rank test, a significant difference in cancer-specific survival based on discharge destination (p<0.001).

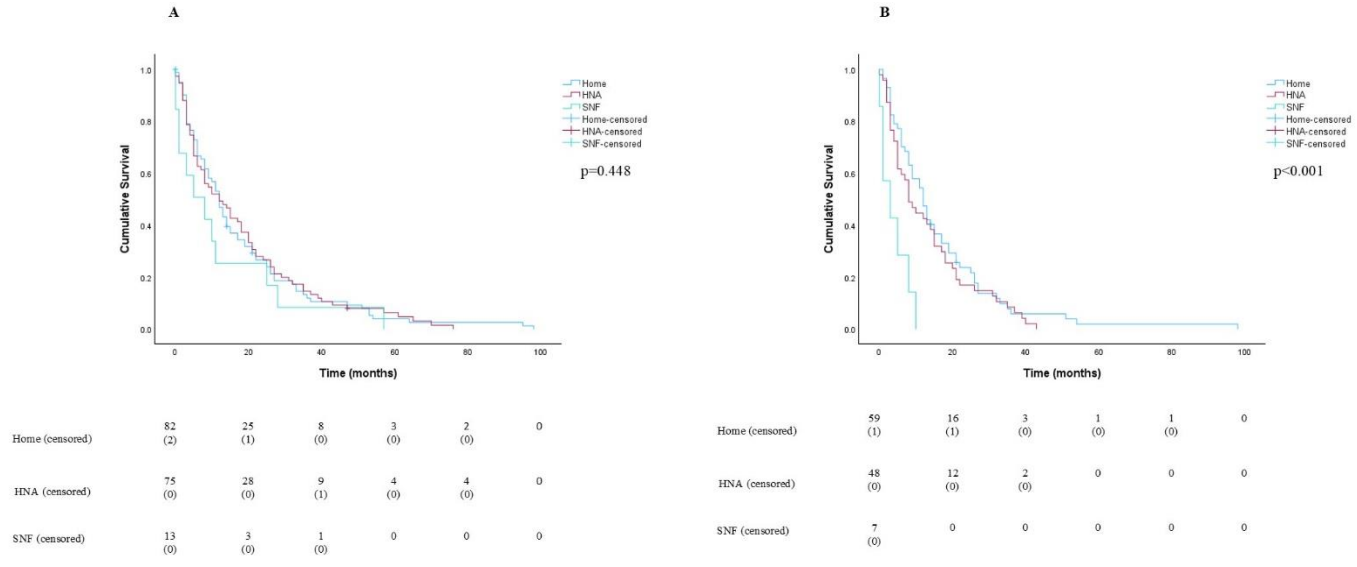

Table 1. Postoperative patient variables by discharge destination				
Variable	**Home**	**HNA**	**SNF**	**p**
Total	215	148	25	–
Gender				
Male	179	112	17	0.075
Female	36	36	8	
Married	143	92	14	0.722
Children	205	136	22	0.357
Charlson comorbidity	5 (4–6)	5 (4–6)	5 (5–6)	0.571
Approach				0.012
Open	135	70	14	
Robotic	79	78	11	
Conduit type				0.087
Ileal conduit	163	131	22	
Neobladder	5	3	0	
Cutaneous ureterostomy	37	13	2	
Other	8	1	1	
Length of stay (days)	4 (4–6)	6 (4–7)	8 (6–20)	0.557
Followup (months)	13 (5–31)	13 (3–40)	7 (2–23)	0.276
Complication before discharge	70 (32.5%)	51 (34.5%)	14 (56%)	0.025
Clavien grade				0.503
I	35			
II	21	19	7	
IIIa	2	18	6	
IIIb	4	6	0	
IVa	1	2	0	
IVb	7	2	0	
		4	1	
ED visit within 90 days	83	52	6	0.636
Number of ED visits	1 (1–2)	1 (1–2)	1 (1–2)	0.890
Reason for ED visit				
UTI/infection	39	23	1	
Bleeding	1	0	1	
Failure to thrive	2	2	0	
Issue with diversion	10	6	3	
GI etiology	15	8	0	0.343
AKI	5	4	1	
DVT or PE	2	1	0	
Cardiac	1	3	0	
Other	8	5	0	
Readmitted within 30 days	60	38	5	0.676
Readmitted within 90 days	45	31	3	0.664

Readmitted ever	87	49	8	0.307
Reason for readmission (30 days)				
UTI/infection	22	11	1	
Bleeding	0	0	2	
Failure to thrive	2	2	0	
Issue with diversion	4	6	0	
GI etiology	17	9	0	
AKI	3	1	0	0.055
DVT or PE	4	1	0	
Cardiac	0	2	0	
Other	8	6	2	
Reason for readmission (90 days)				
UTI/infection	19	14	1	
Bleeding	0	1	0	
Failure to thrive	2	0	0	
Issue with diversion	4	2	0	
GI etiology	8	4	0	0.826
AKI	6	5	0	
DVT or PE	0	0	0	
Cardiac	1	2	0	
Other	5	4	2	
Tumor pathology				
T0	32	12	2	
Ta	7	5	0	
Tis	15	9	4	
T1	18	10	2	
T2a	38	24	3	
T2b	29	22	4	0.552
T3a	28	20	2	
T3b	15	16	1	
T4a	31	22	5	
T4b	2	6	0	
Death within 1-year of hospital discharge	47	38	8	0.731
Overall rate of death	81	75	13	0.037
Cancer-specific death	59	48	7	0.423
Cancer-specific survival (months)	12 (6–21)	8 (4-20)	3 (1–8)	0.093
Overall survival (months)	12 (5–25)	12 (4–26)	5 (0.5–18)	0.572

AKI: acute kidney injury; DVT: deep venous thrombosis; ED: emergency department; GI: gastroenterology; PE: pulmonary embolus; UTI: urinary tract infection.

Table 2. Likelihood of dying postoperatively from radical cystectomy by discharge destination						
Discharge destination	**B**	**Standard error**	**Significance**	**Exp(B)**	**Confidence interval**	
					Lower	**Upper**
HNA	0.523	0.217	0.016	1.7	1.1	2.6
SNF	0.576	0.424	0.175	1.8	0.8	4.1

B is the unadjusted odds ratio and Exp(B) is the adjusted odds ratio. HNA: home nursing assistance; SNF: skilled nursing facility.

Table 3. Area Deprivation Index (ADI) effect on morbidity and mortality after radical cystectomy					
ADI quartile	**1 (≤25)**	**2 (>25, ≤50)**	**3 (>50, ≤75)**	**4 (>75)**	**p**
N	8	47	181	149	–
Discharge destination Home HNA SNF	6 1 1	19 25 3	102 66 12	86 54 9	0.271
Complication before discharge	1	17	64	53	0.607
ED visit within 90 days	2	13	60	66	0.304
Conduit type Ileal conduit Neobladder Cutaneous urostomy Other	 4 0 3 1	 40 1 6 0	 151 3 21 5	 119 4 22 4	0.343
Readmitted within 30 days	0	11	40	52	0.017
Readmitted within 90 days	2	9	36	31	0.979
Overall survival (months), mean (SD)	17.7 (7.4)	21.7 (21.3)	16.1 (17.5)	17.4 (19.1)	0.707
Cancer-specific survival (months), mean (SD)	17.7 (7.4)	12.2 (13.4)	12.9 (12.4)	16 (17.1)	0.680

The following table breaks the study cohort down by ADI quartiles. Three patients were excluded, as they did not have ADI data available. ADI: Area Deprivation Index; ED: emergency department; HNA: home nursing assistance; SD: standard deviation; SNF: skilled nursing facility.