

OUTCOMES AND COMPLICATION RATES FOR CYSTECTOMY AND URINARY DIVERSION FOR BENIGN INDICATIONS: A SURVIVAL ANALYSIS

Hypothesis / aims of study

Decreasing morbidity and restoring the patient's quality of life is a central objective of cystectomy with urinary diversion performed for non-malignant indications. However, there is no long-term survival data on patients who undergo cystectomy and urinary diversion for benign indications. The timing of cystectomy for benign disease is different from that in bladder cancer patients, and extrapolating conclusions from the bladder cancer population can be misleading, as these populations can vary considerably.

The primary aim of this study is to identify the survival of patients who undergo cystectomy and urinary diversion for non-malignant indications. We hypothesize that the neurogenic bladder patients in this cohort will have a decreased survival when compared to patients without neurogenic bladder who undergo cystectomy for benign indications.

The secondary objective is to identify the 30 and 90 day complication rates for cystectomy and urinary diversion and to determine whether a greater severity of perioperative complications correlates with decreased overall survival.

Study design, materials and methods

Institutional Review Board approval was obtained for this a single-centre retrospective observational study performed at a single institution. For data acquisition, a review of the electronic medical record (Epic Systems Corp.) was performed. Additionally, a review of the electronic medical record system within the Anaesthesiology department was performed (Centricity® General Electric Healthcare, Waukesha, WI). A review of the electronic intraoperative record was also performed, and data queried included physiologic parameters, medication administration, fluid and blood product administration, and epidural usage.

Initial identification of patients was made by querying billing current procedure terminology (CPT) codes for patients who underwent cystectomy and urinary diversion. Inclusion criteria include patients who underwent cystectomy and urinary diversion by the Female Pelvic Medicine and Reconstructive Surgery division between 2007 and 2014. Exclusion criteria for the study were a concomitant diagnosis of muscle-invasive bladder cancer and absence of at least 30 days of postoperative follow-up.

Demographic data collected included patient age, gender, body mass index, distance travelled for medical care, mobility criteria, and medical comorbidities. The underlying neurogenic diagnosis and indication for cystectomy were also identified. Urodynamic data was obtained when available.

Outcome data included length of stay (LOS), return of bowel function, and 30 and 90 day readmission and complication rates, as well as post 90-day complication rates, length of follow up, long-term eGFR, and the results of yearly upper tract surveillance. The Clavien-Dindo scale was used to grade 30 and 90 day complications based on severity.

Survival data was obtained by querying the Federal Social Security Death Master File (SSDMF) and the state's Death Index. These registries are updated on a monthly basis and have a >90% accuracy for survival. Assessment of patient survival was performed using Kaplan Meier analysis. Comparison of survival curves between patient groups was performed using the Log Rank Test. Statistical analysis was performed using SPSS 22 (IBM Corp) and SAS (SAS Ins, Cary, NC, USA).

Results

Through CPT codes, 154 patients were identified. Two patients were excluded from the study because they had a concomitant diagnosis of bladder cancer and 4 patients were excluded because they did not have at least 30 days of postoperative follow-up. All patients included in the study underwent urinary diversion and 110 patients (72.8%) underwent simple cystectomy. The average patient age was 58.4 years (range 21-85) and 83 patients (55%) were women. Median follow-up was 14.9 months. Seventy patients (47%) had a diagnosis of neurogenic bladder. The neurogenic bladder group was further divided into patients with spinal cord injury (SCI, N=27, 17.9%), multiple sclerosis (MS, N=20, 13.2%), spina bifida (N=7, 4.6%), and stroke-related neurogenic bladder (N=17, 11.3%). Additional diagnoses included radiation cystitis (N=50, 33.1%), and interstitial cystitis/bladder pain syndrome (N=22, 14.9%).

Adverse events were documented in 99 (66.8%) patients. Each patient was classified to their highest complication. Stratified by severity, 84 patients (44.4%) experienced a Clavien-Dindo grade II or higher complication, and 37 patients (24.5%) experienced grade III or higher complications.

Survival analysis was performed on the entire patient cohort, demonstrating a 1- and 5-year mortality of 88.4% and 77.2%, respectively. Log rank test was performed looking at the comparative survival of the neurogenic bladder group to the entire cohort as well as the individual survival of each neurogenic bladder subgroup with no statistically significant difference observed amongst the groups. Univariate and multivariate Cox proportional hazards modelling were used to compare the survival amongst the patient groups stratified by severity of complications and potential risk factors for decreased survival. There was no statistically significant difference in survival amongst the different groups.

Interpretation of results

The findings in this retrospective study demonstrate that overall survival is favourable for patients with a benign or neurogenic bladder diagnosis who undergo cystectomy with urinary diversion. No subgroups were identified for increased risk of mortality. The incidence of moderate and severe complications was high in this population, but major complications were not found to

impact survival. These results should be interpreted with caution, however, as this cohort of patients was small and may not be representative of a population of patients undergoing cystectomy with urinary diversion for non-malignant urologic disease.

Concluding message: This is the largest patient cohort assembled to look at survival outcomes for cystectomy in this specific patient population. Patients undergoing cystectomy for benign indications have a favourable 1- and 5-year survival but experience a high rate of perioperative morbidity. This information is useful when caring for this high-risk patient population.

Disclosures

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