

How adherence to enhanced recovery after surgery protocols impacts on patient outcomes post radical cystectomy surgery

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Background

Enhanced Recovery after Surgery (ERAS) protocols have been shown to improve patient outcomes after major surgeries. It has been validated in the elective radical cystectomy (RC) in our hospital with overall morbidity, as defined by the American College of Surgeons National Surgery Quality Improvement Program (ACS NSQIP), initially decreasing by 40% post implementation. Prior studies have demonstrated that increase adherence to the ERAS components was associated with improved outcomes. We studied the impact of adherence to our ERAS protocol following elective RC on patient outcomes.

Methods

A multidisciplinary team implemented an ERAS protocol in October 2014. A project charter and an implementation plan were initiated. The adherence to 12 key ERAS components was measured in 152 consecutive cases (October 2014-September/2016). The 12 ERAS components included: preoperative counselling & anesthesia consultation, carbohydrate loading, maintenance of normothermia, timely antibiotics administration, use of multimodal analgesia & goal-directed fluid therapy, adequate postoperative nausea and vomiting prophylaxis, mobilization on POD 0 & 1, oral nutrition on POD 1 & 4. ACS NSQIP defined 30-day postoperative complications, length of stay (LOS) and readmissions were assessed and were compared between two cohorts, those who had $\geq 75\%$ compliance and $< 75\%$, as well as to our pre-implementation cohort (May 2011-September 2014 n=90).

Results

Post-implementation, 52% of patients achieved $\geq 75\%$ adherence to the 12 ERAS components. Process measures showed that the preoperative and intraoperative components (except use of goal directed fluid therapy) had met our goal of a minimum of 80% compliance. Postoperative components have been the slowest to change, but they are heading towards our goal. Patient demographics in both cohorts were comparable. Postoperative outcomes for 90 patients pre-ERAS were compared with 152 patients post-ERAS implementation. Post-ERAS implementation, rates of overall morbidity fell from 31.1% to 21.1% ($p=0.09$), a 32% reduction. Patients with $\geq 75\%$ adherence had a lower morbidity rate (15.2% vs 27.4%) as compared to those with $< 75\%$, a 51% reduction in morbidity from the pre-implementation results. We have moved from decile 8-10th before ERAS to 1st decile with odds ratio for morbidity is now at 0.58 (CI 0.35-0.95). (See Table 1 below).

Table 1: Patient Demographics and Outcomes

	Pre ERAS	Post ERAS	<75% Adherence	≥75% Adherence
Number of cases	90	152	73	79
Age (mean)	69	67	66.7	67.3
NSQIP Co-morbidity Count (mean)	1.1	1.05	1.11	1
Cases with ≥ 1 Postoperative Complications	31.1%	21.1%	27.4%	15.2% (51 % reduction from Pre ERAS)
Superficial Surgical Site Infection	12.2%	5.9%	9.6%	2.5%
Urinary Tract Infection	10%	5.5%	5.1%	5.3%
Sepsis/Septic Shock	14.4%	6.6%	9.6%	3.8%
Transfusions	43.3%	25.7%	27.4%	24.1%
Ileus	10%	10.5%	13.7%	5.1%
Readmission	16.7%	13.2%	13.7%	12.7%
Median LOS (days)	7.5	7	8	7

Conclusions

Adoption of ERAS pathways had resulted in 32% reduction in postoperative complications following RC in our hospital. Increased adherence (≥ 75%) to ERAS components was associated with a further improvement in patient outcomes. Further work is needed to foster the adherence to the intraoperative and postoperative components. Ongoing auditing & repetitive education are also vital to increase adherence and sustain the improved outcomes.