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Implementation of Enhanced Recovery After Surgery (ERAS) Protocol after cystectomy: A Quality Improvement Project to Evaluate Bowel Function with implementation of ERAS Protocol

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Executive Summary

Introduction of Problem

The American Cancer Society 2019 estimates there are 80,470 new cases of bladder cancer of which about 17,670 will die due to the diagnosis (American Cancer Society, 2019). Radical Cystectomy which is the standard of care for patients diagnosed with bladder cancer (muscle-invasive and selective superficial bladder cancer) is a highly complex intervention associated with significant intraoperative and postoperative morbidity with prolonged length of stay in the hospital (American urological Association, 2019; Palumbo et al., 2018).

Enhanced recovery after surgery (ERAS) protocol is a series of evidence-based treatments and guidelines established by the ERAS society to improve clinical outcomes of patients after surgery while providing a “fast track” pathway for surgical patients. The theoretical basis is to reduce surgical stress while facilitating postoperative recovery and has been found to impact clinical outcomes for radical cystectomy patients (Cerantola et al., 2013). The purpose of this Quality Improvement Project was to develop and introduce an ERAS protocol for cystectomy patients at a regional hospital in Central Illinois.

Literature Review

The Enhanced recovery after Surgery Protocol was developed after reviewing current literature on the subject. Initial search with ERAS protocol yielded 11,997 results, but a repeat search combining ERAS protocol with cystectomy gave 29 results. I selected 10 newer articles including a qualitative study with RCTS's that were specific to implementing ERAS protocols with emphasis on outcomes on length of stay and incidence of bowel obstruction. In general, ERAS protocols have shown significant positive outcomes with associated reduced hospital charges, decreased length of stay, reduced complications rates, readmission, and increase in patient satisfaction scores after cystectomy surgery (Semerjian et al., 2018). A systematic review showed a lower overall complication rate, a shorter length of stay, and a faster return of bowel function when using ERAS pathway (Tyson & Chang, 2016).

A recent study by Nutta, Scaief, Dynda, and Alanee (2018), pooled patients within the Nationwide Inpatient Sample who underwent a radical cystectomy between 2006 and 2012 and found that out of a total of 41,498 patients, 1071 (2.6%) experienced SBO, and 11,155 (26.9%) experienced an Ileus. A rough estimate of postoperative Cystectomy patients who develop an Ileus or SBO is about 45%. The goal was to introduce the ERAS protocol in a bid to improve these outcomes. Semerjian,et al. (2018), also show that implementing an ERAS pathway significantly reduced the length of stay and Hospital charges secondary to readmission rates in patients undergoing a radical cystectomy. A study by Danna, Wood, Baack Kukreja, and Shah (2016), showed that the core components of the ERAS protocol that have a significant impact on postoperative Ileus prevention are avoiding bowel preparation, preoperative carbohydrate loading, removing the NG tube after surgery, early mobilization and advancement of diet.

Project Methods

The purpose of this quality improvement project was to develop an enhanced recovery after surgery protocol for bladder cancer patients treated with a radical cystectomy at a regional hospital. The project team comprised of the Urology surgeons, Anesthesia team, Urology nurses and the inpatient hospital nurses who were all involved in the different aspects of the protocol. Based off the information from the literature review, an ERAS protocol specific to the Urology Department at that institution was developed after collaboration between the team members and external stakeholder.

Major components of the ERAS protocol implemented included: Pre-operative patient teaching, minimizing NPO status, oral bowel prep and carbohydrate loading. Post-operative care includes: early food intake postoperative day (POD) 1, early mobilization POD 1, and pain control with non-opioid medications. All interventions were implemented at the facility before and after surgery and were managed primarily by the Urology service.

The Southern Illinois University Edwardsville IRB on February 2nd 2020 determined that this proposal was considered a Quality Improvement Project (QIP) and did not constitute a human subjects research as defined under 45CFR 46.102(l). As such, no further action was required before starting implementation. Additionally, the regional hospital IRB team had reviewed the proposal and it cleared for implementation starting December 12th 2019.

Following introduction of the ERAS pathway in February 2020, this team member prospectively collected data from February 2020 to July 2020 on all patients undergoing radical cystectomy with the ERAS pathway. This group was compared to a retrospective chart review of

15 patients who had a radical cystectomy with traditional care from January 2018 to December 2018.

The primary outcome evaluated was hospital length of stay. Secondary outcomes included development of postoperative ileus and evaluation of nursing staff after ERAS protocol education. Patient identifiers were removed from all obtained patient data, and urology nurses who participated in the pre and post education test remained anonymous as the tests were evaluated using blind review. The inpatient hospital team were also anonymous as their answers were reviewed via Survey Monkey.

Evaluation

Five patients underwent a radial cystectomy on the ERAS pathway with reduced hospital length of stay. The median was five days with the least number of days being four and a maximum of nine days. They also had 0% occurrence of bowel obstruction and all the patients had a bowel movement before discharge compared to the pre ERAS group who had a median length of stay of eight days with a minimum stay of six day and maximum stay of twenty days. They pre ERAS group also had 53.3% rate of bowel obstructions during their admission leading to a longer hospital stay as well.

The blinded pre and posttest evaluation after ERAS education with the six urology nurses had a 43% pass rate pre presentation/education and 93% pass rate post education. For the inpatient nurses, there were 73 participants with a 34% pass rate pre-ERAS protocol education and 94% pass rate after ERAS education. This revealed significant improvement on the nurses' knowledge of the ERAS protocol and its goals for implementation in both settings.

A major limitation of this project is the lower number of five cystectomy patients in the ERAS group compared to the retrospective group which had fifteen patients. However, using the institutions outcomes compared with national averages post cystectomy, it showed that this institution had a lower length of stay compared to the average of 10.7. This further indicates the goal for reducing the length of stay post cystectomy was exceeded both in the institution and nationally as well.

Impact on Practice

An evaluation of this quality improvement project demonstrates that ERAS protocols are beneficial to patient outcomes after treatment of bladder cancer with a radical cystectomy. The project has been able to show a positive impact with decreased length of stay and significantly reduced occurrence of bowel obstruction. The data from educating the nurses also revealed significant improvement in the knowledge base post education on the implementation of ERAS pathway. Limitations of this project, as mentioned above, was due to the lower number of surgeries in this hospital. However, given the significant improvement after implementing the ERAS protocol on the post cystectomy patients, this protocol had been adopted wholly by the Urology service at the institution. The ERAS is currently being used all Urology surgeries involving the abdomen including nephrectomy is since April, 2020.

Conclusion

This quality improvement protocol met the goals of the project. The first goal was to develop an ERAS protocol for the institution using evidence base guidelines from the literature review. The second goal was also successful as the implementation of the ERAS protocol positively impacted the length of hospital stay post cystectomy as well as the occurrence of postoperative ileus as

shown in the data. The project outcomes clearly demonstrate that an ERAS protocol can be successfully implemented at a regional hospital with positive outcomes for the patients.

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