



Review

From fast-track to enhanced recovery after surgery in radical cystectomy pathways: A nursing perspective



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ABSTRACT

Objective: The purpose of this narrative review is to summarize existing knowledge and evidence about the establishment of enhanced recovery after surgery (ERAS) pathways with emphasize on radical cystectomy (RC), and the emerging and prominent role of nursing within the ERAS pathway. The current status of implementation and adherence to ERAS protocol in RC is discussed and the impact on primary outcomes according to ERAS is summarized.

Methods: The review was conducted based on a focused search in PubMed and CINAHL.

Results: The goal of a modern RC enhanced recovery protocols (ERPs) anno 2022 is to have a *positive* impact on patient care from diagnosis throughout recovery with focus on the *quality*, rather than speed, of recovery. This may be more in alignment with the patient's needs and preferences.

Conclusions: Nursing has been in the forefront since the establishment of ERAS, and the nurse-coordinator must be skilled in evidence-based medicine and have excellent communicative competencies to support the patient journey. Implementation of ERAS have reduced hospitalization by improved minimal surgery, optimized anesthetic regimes without increasing readmission rates. It is not known which items can reduce post-operative complications. In the future, nurses should seek a more prominent and leading role during the implementation process and take responsibility for continued education of the staff. Likewise, future nursing interventions will focus on early identification of modifiable risk factors, and a deeper exploration of the patients personally needs and preferences to upcoming surgery could optimize adherence throughout the pathway, which may add to positive outcomes.

Introduction

Radical cystectomy (RC) remains a procedure with significant morbidity,¹ which is burdensome for the individual patient. Professor Henrik Kehlet, Copenhagen University Hospital was the first who outlined the concept of fast-track pathways three decades ago in the field of colorectal surgery.²⁻⁴ He started making inquiries whether we offered the surgical patients the best treatment and care and if so, was it evidence based?

These considerations involved the whole pathway from identification of a need for surgery, preparation for surgery, perioperative procedures and postoperative care. The concept was that the key pathogenic factor in postoperative morbidity is the surgical stress response with subsequent increased demands on organ function. These changes in organ function

were believed to be mediated by trauma-induced endocrine metabolic changes and activation of several biological cascade systems, the surgical stress response.³ So, in order to understand postoperative morbidity it was necessary to understand the pathophysiological role of the various components of the surgical stress response, and clarify if modification of such responses and other risk factors, could improve surgical outcome.⁵ This was the onset of three decades of extensive research across surgical specialties to clarify whether a multi-professional approach and multimodal procedure specific interventions may lead to a significant reduction in the undesirable sequelae of surgical injury, improve recovery, a profound reduction in postoperative morbidity and overall costs.

In urology the role of enhanced recovery after surgery (ERAS) was evaluated in 2013, and it was concluded that ERAS had not yet been

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widely implemented in urology and that evidence for individual interventions was limited or unavailable.⁶ The core question “why is the patient still in the hospital?” became the driving force to optimize the surgical pathways.⁷ Although Kehlet et al. had invented the term fast-track surgery, the ERAS-group wanted to stress that the key surgical end-point is the *quality*, rather than speed, of recovery, which was considered a barrier by skeptic colleagues in the early days of ERAS. The concepts, however, rested on the same five basic components: patient information, goal-directed fluid therapy, nutrition, pain-management, and early mobilization and carefully described by the ERAS group, and evidence was collected and monitored from different surgical specialties’ and populations.⁸ The concept clearly encouraged a multi-modal and multi-professional approach to surgery and surgical care, and continuously nursing involvement, especially in patient information, nutritional care and early mobilization is of utmost importance.^{5,9-11}

The improved understanding of the pathophysiology of postoperative recovery within an integrated multi-professional and multi-modal approach almost immediately resulted in positive results across surgical procedures with a reduction in hospitalization and medical complications (in some specialties) and without increased re-admission rates. Recently, new chapters of the ERAS Society have been launched around the world and importantly, a special section of nursing care has been formed to promote education and provide support to ERAS coordinators, which most often are dedicated nurses in the surgical field.¹¹

This article presents an overview of the establishment of the ERAS concept, the achievements and current challenges in major bladder cancer surgery and implication for the urologic nurse.

Methods

A narrative review was conducted. A search in PubMed and CINAHL eliciting evidence about the establishment of fast-track surgery, the enhanced ERAS protocol in RC, the emerging role of nursing in ERAS, current challenges in implementation of ERAS and outcome.

The following search terms were used: Nursing* and/or enhanced recovery after surgery and/or fast-track and/or radical cystectomy and/or bladder cancer and/or implementation and/or pre (re)habilitation.

Relevant articles were identified, which included the history of fast-track surgery, establishment of ERAS, requirements for implementing ERAS and different aspects of nursing in ERAS pathways. In addition, the impact of ERAS in RC pathways on the current outcome of interest and future preventive nursing interventions according to the ERAS protocol.

Results

The ERAS radical cystectomy pathway

RC with pelvic lymphadenectomy and urinary diversion represents an integral component in the management of patients with muscle

invasive bladder cancer (MIBC) and high-risk non-MIBC (NMIBC). Despite implementation of procedure specific enhanced recovery protocol (ERP)’s locally perioperative outcomes have remained almost unchanged.¹² Postoperative morbidity persists, and published all course complication rates range from 25% to 90% within 30 days after resection of the bladder, and causes short as well as long-term impairment for the patient.^{13,14} The goal of a modern ERPs anno 2022 is primary to have a *positive* impact on patient care from diagnosis, through surgery and throughout recovery (Fig. 1). However, there remains a lack of procedure specific evidence for several elements in ERPs, hence many principles applied to local ERPs still originates from colorectal surgery have given raise for criticism and the urology community have been reluctant to fully implement the RC ERAS pathway.^{15,16}

The development of procedure specific ERP in RC

An ERP in RC mainly describes a standardized multimodal perioperative care pathway that aims to minimize the physiologic and psychological stress effects of surgery. The ERP currently covers the period from the patient is diagnosed until discharge and involves pre, intra and postoperative care. The first ERP for RC was published in 2013 by Cerantola et al. consisting of 22 individual elements, whereas only eight elements were considered evidence based and of moderate to low level of evidence.⁶ In 2016, Collins et al. published the European Association of Urology, Robotic Sections Consensus View in robot assisted RC. The standardized ERP now consist of 34 individual elements, and 27 recommended elements for auditing outcome data in a standardised template, which is available from the EAU.¹⁶ Of note, there is currently no definite agreement on which items should and should not be implemented in RC and in particularly it is unknown which items can reduce post-operative complications.¹⁷

Initially, the first fast-track protocols used only a few well known element such as preoperative information, avoidance of oral bowel preparation, use of thoracic epidural analgesia, avoidance of fluid overload, early progressive mobilization, same day oral feeding and elimination of nasogastric tubes, drains, etc.⁹ and nurses were specifically educated to follow the protocols. During the years it has become clear that continued education and involvement of nurse-leaders are pivotal for successful implementation of all components in ERAS.¹⁸

Nursing care within ERAS

The pioneers of ERAS immediately embraced nursing as core contributors to successful outcome.⁹ ERAS involves nurses at all levels; nurse directors, nurse leaders, nurse coordinators, perioperative nurses, intensive care nurses, ward-nurses, anaesthetic-nurses, nurse-researchers and discharge nurses. Nursing care has an influential role and is essential

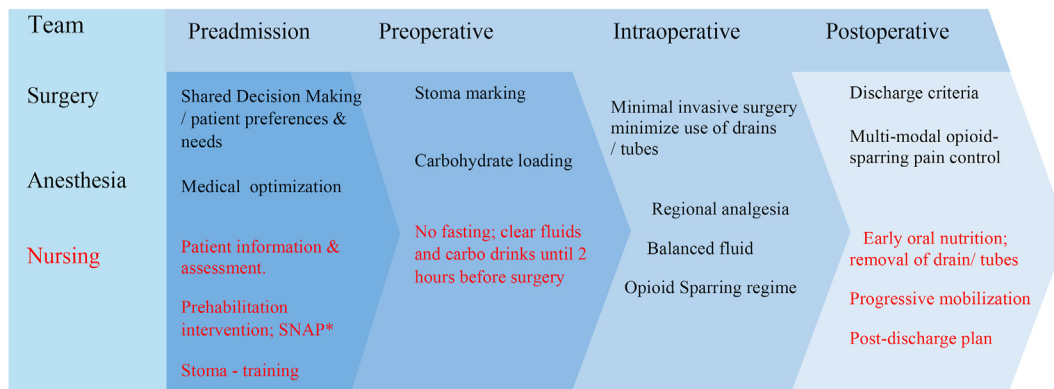


Fig. 1. ERAS flowchart in radical cystectomy.

in the ERAS pathway.¹⁹

The ERP's is a dynamic tool and are characterized by a continuously process to update and refine the content with respect to new evidence in treatment and care. This means that the nurse coordinator must be highly skilled in evidence-based medicine methods, but also possess special skills like flexibility and communicative skills to manage the team, keep track on new evidence and adjust the care pathways according to recent evidence or audit results (Fig. 2).

A nurse leader has the capacity to ensure that every team member is accountable and have the necessary competencies that contributes to the implementation, and proceed as per protocol.^{11,19} Procedure specific nursing standard of care pathways and algorithm must be evidence-based and clearly described in ERP's for pre- and postoperative interventions, including everyday goals and documentation of achievements.^{18,20} While evidence-based medicine is still rather new in nursing, it is not always possible to gather evidence for each item. Therefore, it is crucial to have national consensus on best practice to ensure transparency and to avoid significant variation in any of the pathways. Most often nurse-coordinators have solved such issues on national workshops.¹⁰

The progress of different aspects of patient pre- and postoperative education and self-care must be documented to estimate the current level of self-efficacy to aid post-discharge efforts and evaluate the efficiency of the ERP.¹⁰

Nursing research

It is also important to recognise the role of nursing research in the context of ERAS. It is pivotal, that nurse researchers monitor all data

throughout the pathway, and thus auditing is data driven and offer the ability to qualify the nursing interventions continuously. Moreover, it is suggested that the urologic nurse researcher should investigate the concept of symptom clusters to clarify, whether there are more efficient methods to identify symptoms or symptom clusters, and if so, would the use of symptom clusters knowledge improve patient care.²⁰ While ERAS is a dynamic process, it is important to have robust data to facilitate any need of adjustment along the pathway, and possible bring it forward to the multi-professional team.²¹

Shared decision-making (SDM)

Currently there is a wind of change along the core cancer care continuum; shared decision-making (SDM) is increasingly important in uro-oncology care, where patients are faced with difficult treatment decisions that require them to weight efficacy, safety, and quality of life.^{22,23} In Denmark SDM is a national demand, however, the process of SDM is often a challenge due to lack of (population specific) validated decision aids. A decision aid tool is designed to facilitate the SDM and to prepare patients for the surgical decisions by weighing benefits towards risks and to improve the patient's knowledge and help patients identify their priorities and feel informed.²⁴ Another goal is to involve patients in own recovery through patient centred, supportive care and educational initiatives.²⁵⁻²⁹ Patient's value and desire considerations of aspects of their treatment beyond the simple balance efficacy versus adverse effect such as presence of support systems throughout the pathway.^{22,30} Therefore, it is vital early to identify the patients personally needs and preferences to upcoming surgery to optimize adherence throughout the pathway.



Fig. 2. A typical ERAS flowchart.

Current status of implementation of ERAS RC

A recent study explored the current practices of ERAS in RC in Europe under the umbrella of the first ERP from 2013.⁶ Today, there is a consensus (99%) that ERAS improves perioperative outcomes of RC, and applied to every RC patient in 90% of the cases, 25% of centres have not yet assessed the implementation of the ERAS protocol in their center.¹⁷ The application of preoperative counseling, avoiding bowel preparation, thrombo-prophylaxis, prevention of intraoperative hypothermia, and removal of the nasogastric tube were regularly implemented (> 90%). Interestingly, the five most commonly identified barriers were the difficulty in changing habits (55%), lack of communication across the surgical and anesthesiologist teams (33%), absence of dedicated staff (28%), fear of complications (16%) and absence of a real clinical benefit (9%). On the other hand the five most complicated items to implement were: audit (14%), opioid sparing anesthesia (14%), early mobilization (out of bed day 1) (13%), pre-operative optimization (11%) and preoperative carbohydrate loading (9%). These results support the need to uniform the ERAS protocol for patients undergoing RC, and revisit strategies to help the urology department to implement ERAS using items or clusters of item, which specifically support reduction in complications, which remains unchangeable high.¹⁴

ERAS-primary outcome

Length of stay

Length of stay (LOS) remains an outcome of interest as a proxy for recovery. Secondly, postoperative morbidity, re-admission rates and return of the bowel function have been in focus. LOS was in the early days significantly reduced from 14 to 17 days down to 7–9 days in most trials, and lately highly selected centres report LOS to be 4 days but on the other hand no reports on the need of rehabilitation service.^{17,31–33} Some of the ERAS success in RC may be attributable to cohorts, where LOS was rather high to begin with, compared with most institutions.³³ Recently, a meta-analysis has shown that patients with higher age adjusted Charlson comorbidity index (CCI) are those who benefit most with respect to LOS, probably because these people have higher baseline LOS owing to higher CCI and thus most room for improvement.³⁴ However, the LOS has been questioned for being too elastic, especially without firm discharge criteria, difficult to compare between surgical centers' and specialties and may not exactly describe recovery from a patient point of view. Outcome reflecting quality of life and functional level have been suggested as more relevant outcome while real time recovery is happening after discharge owing to short LOS.^{35,36} In reality, full recovery only occurs once normal baseline function has been restored/superseded and adverse symptoms have resolved. Thus, there are at least three stages to recovery (discharge from ICU recovery, discharge from hospital and return to baseline), and each stage needs to be satisfactorily achieved for complete recovery to occur.³⁷

Another existent paradox is the barrier to avoid opioid sparing anesthesia as discussed before. Therefore, there is now an urgent need for quality of recovery scoring systems to be updated or augmented to examine the incidence and causes of persistent postoperative opioid use as reported earlier.¹⁷ The benefits gained from surgery must not be allowed to be negated by the subsequent harm and reduction in function caused by persistent opioid use. Outcome reflecting recovery from the patient's point of view in the future would properly be restoration of function level and the evolution of practice will enable the individualization of care to facilitate restoration of function and full recovery through shared decision-making, prehabilitation, peri-operative comorbidity management and rehabilitation to achieve the best outcomes

reflecting true recovery.³⁸

Postoperative complications

Postoperative complications after RC remains unchangeable high despite ERAS and ERP, nor has the introduction of prehabilitation interventions shown a significant reduction in postoperative complications mainly because the few studies performed lack power.^{33,39} ERAS have significantly reduced complication after colorectal cancer surgery and in other specialties; however, it is still not clear whether it is lack of adherence to the ERP or factors related to the surgical stress response, which causes the continuously high burden of postoperative morbidity. Since the process of recovery is multifactorial, with influence from pre-, per- and postoperative factors, a further rational approach has been *functional optimisation* before surgery also called prehabilitation.^{40,41}

Frailty: An underreported risk factor

There is emerging awareness of the aging, comorbid frail population, which describes the RC population.^{42,43} Frailty is a multidimensional and dynamic age-related condition characterized by declining functioning across multiple physiological and psycho-social factors, accompanied by an elevated vulnerability to stressors.^{44,45} Frailty in RC Patients are significantly associated with mortality⁴⁶ and surgical cancer treatment is a stressor adding further risk of deterioration of health status to the inherent risk of negative health care outcomes among frail elderly. As not all domains adding to frailty are modifiable, it is important to identify RC patients with potentially reversible health issues to modify before the surgical procedure is performed.⁴⁷ Such an approach with a target and tailored prehabilitation intervention with focus on age, frailty and reversible health issues may introduce a more reasonable approach from the patient point of view and may reduce complications in the most vulnerable patients.

Conclusions

The goal of a modern RC ERPs anno 2022 is primary to have a *positive* impact on patient care from diagnosis, through surgery and throughout recovery with focus on the *quality*, rather than speed, of recovery. In the future restoration of function level may be more in alignment with the patient expectations of recovery. Implementation of ERAS have reduced LOS over the years along with improved minimal surgery and optimized anesthetic regimes without increasing readmission rates. It is currently not known which elements of the ERP contributes most, and currently no definite agreement on which items should and should not be implemented in RC ERP, and in particularly it is unknown which items can reduce post-operative complications. In the future, nurses should seek a more prominent and leading role during the implementation process and take responsibility for continued education of the staff. Likewise, future nursing interventions will focus on early identification of modifiable risk factors, and a deeper exploration of the patients personally needs and preferences to upcoming surgery could optimize adherence throughout the pathway, which may add to positive outcomes.

Declaration of competing interest

None declared.

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