Enhanced Recovery After Surgery (ERAS) Radical Cystectomy and Urinary Diversion

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Bladder Cancer

- Invasive bladder cancer a disease of the elderly
  - Most patients are 65 yrs or older
  - Increasing % are 80+ yrs
- Multiple medical conditions
- Cumulative cigarette smoke exposure
  - Cardiac disease
  - Decreased pulmonary function
- Up to 1/3 receive neoadjuvant chemotherapy
Radical Cystectomy

- Approximately 10,000 cases annually
- Among the most complex urologic operations
  - Associated with considerable morbidity and prolonged inpatient stay
- Complications after cystectomy have been reduced
- LOS remains in the 8-9 day range and is the most reported quality indicator for RC

HCUP Nationwide Inpatient Sample (NIS, 2011. www.hcup-us.ahrq.gov/nisoverview.jsp
Traditional Care

- Surgery is planned ‘as soon as possible’
  - No training or conditioning
- Bowel prep (mechanical and antibiotic)
- NPO p MN (clears only for 1-2 days)
- Compensatory overhydration at onset of case
  - Aggressive hydration during case – fluid overload
- NGT and NPO until flatus
- Opioid analgesia
  - Limiting mental acuity and mobility
Traditional Hospital Course

- Typical stay ~10 days in US*
- ~60% complication rate (15% high-grade complications)
- ~30% hospital readmission rate

*15-20 days in Europe/Asia

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<table>
<thead>
<tr>
<th>Outcomes for ICD-9-CM principal procedure code 57.71 Radical Cystectomy</th>
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<tbody>
<tr>
<td><strong>Age group</strong></td>
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<td>Urban, nonteaching</td>
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<td>Urban, teaching</td>
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Which is more grueling?

- Healthy 32 yr old male, who has trained for 12 months, running a 4 hour marathon

- Frail 74 yr old smoker with COPD, diabetes, dyslipidemia, and CAD undergoing a 6-8 hour radical cystectomy
What is Enhanced Recovery after Surgery (ERAS)?

- Championed in Europe by Colorectal Surgeons
  - First introduced in 1990s

- Evidence based multimodal approach focused on peri-operative period

- Improve patient recovery after surgery
  - Modify physiologic and psychological response
  - Enable discharge home earlier
  - Without compromising safety and wellbeing

- Several meta-analyses have shown accelerated recovery and decreased hospital stay with ERAS in colorectal surgery.

Guidelines for perioperative care after radical cystectomy for bladder cancer: Enhanced Recovery After Surgery (ERAS®) society recommendations
Framework of Enhanced Recovery

- Pre operative
- Enhanced Recovery
- Intra operative
- Post operative
Preoperative Enhanced Recovery Framework

• Optimization of medical co-morbidities
• Smoking cessation
• Nutrition Assessment
  - Even short term dietary modification helpful
  - Decrease alcohol intake
• Prehabilitation
  - Physical conditioning, even 1 week is helpful
Preoperative Enhanced Recovery Framework

Written and oral pre-admission information describing:

• What will happen during hospitalization
• What they should expect
  - Length of stay
  - Home plan
    - Who will be at home with you after discharge?
• Their role in the preparation and recovery process

Baack Kukreja et al. BJUI. 2016
Intra-operative Enhanced Recovery Framework

- Efficient and expeditious surgery
- Smaller incision
- Less bowel manipulation
- Minimization of blood loss and transfusion
- Non-narcotic analgesia intraoperatively
- Instillation of local anesthetic at incision sites
GI Recovery is an Important Driver for Length of Stay and Readmission

• Delayed GI recovery (POI, “ileus”) is the most common cause for prolonged hospital stay after radical cystectomy
  - Rate of POI: 12 and 25%

• POI-related increased LOS contributes to morbidity
  - Increase risk of secondary clinical consequences (eg nosocomial infections, readmissions)

• POI adds substantive cost burden to the healthcare system

Enhanced Recovery Framework (GI)

- Avoid intense bowel preparation
- Avoid NG tubes
- Pharmacological prophylaxis of postoperative nausea or vomiting
- Enforced early enteral feeding diet POD#1
- Liberal use of laxatives
- Alvimopan
Phase 4 study of Alvimopan in RC:

**Hypothesis/Objectives**

Phase 4 Randomized, double-blind, placebo controlled study (N=280)

- **Primary aim**
  - Evaluate effect of Entereg® (alvimopan) on recovery of GI function after radical cystectomy and urinary diversion

- **Secondary**
  - Effect on length of stay (LOS)
  - Effect on POI-related morbidity
  - Evaluate safety of alvimopan
Alvimopan Reduced POI-related Morbidity

- Overall POI-Related Morbidity: 8.4% compared to 29.1% in the placebo group, with a significant reduction of 20.7%.
- Postoperative NGT Insertion: 7.7% compared to 24.6% in the placebo group, with a significant reduction of 16.9%.
- POI Resulting in Prolonged LOS: 3.5% compared to 21.8% in the placebo group, with a significant reduction of 18.3%.
- POI Resulting in Readmission ≤ 7 d of Discharge: 0.7% compared to 0.8% in the placebo group, with a non-significant reduction of 0.0%.

All comparisons show a significant reduction in morbidity with Alvimopan (P < .001), except for the POI resulting in readmission within 7 days of discharge, which shows no significant difference (P = 1.000).
Enhanced Recovery Protocol after Radical Cystectomy for Bladder Cancer

Siamak Daneshmand,* † Hamed Ahmadi, Anne K. Schuckman,‡ Anirban P. Mitra, Jie Cai, Gus Miranda and Hooman Djaladat

From the Institute of Urology, Norris Comprehensive Cancer Center and Department of Pathology and Center for Personalized Medicine (APM), University of Southern California, Los Angeles, California

Hospital Stay

LENGTH OF HOSPITAL STAY (days)

NUMBER OF PATIENTS

- ERAS Patients
- Historical Cohort

Quality of Life

- Randomized study of 101 consecutive patients undergoing radical cystectomy

- Primary Endpoint: difference in QOL - “Significant Improvement with ERAS”

- Secondary Endpoints: Morbidity was lower for ERAS - Wound healing (p=0.006), fever (0.004), and thrombosis (0.027).
  - Analgesics demand was significantly lower for ERAS; amount higher.
  - Time spent at intermediate care unit significantly shorter (p<0.001)

Karl A et al: J Urol. 2013
Cost Analysis of the Enhanced Recovery After Surgery Protocol in Patients Undergoing Radical Cystectomy for Bladder Cancer

Jamal Nabhani, Hamed Ahmadi, Anne K. Schuckman, Jie Cai, Gus Miranda, Hooman Djaladat, Siamak Daneshmand *

University of Southern California (USC) Institute of Urology, USC/Norris Comprehensive Cancer Center, Los Angeles, CA, USA

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard</th>
<th>ERAS</th>
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Readmissions after radical cystectomy

- Cystectomy continues to have one of the highest readmission rates of any surgery ~25%
- Stable readmission rates over the past decade
- $15$ billion per year in health care costs

Exploring the Burden of Inpatient Readmissions After Major Cancer Surgery

Karyn B. Stitzenberg, YunKyung Chang, Angela B. Smith, and Matthew E. Nielsen

- Bladder: 30 day, 30%; 90 day, 43%
- Lung: 30 day, 13%; 90 day, 23%
- Pancreas: 30 day, 22%; 90 day, 35%
- Esophagus: 30 day, 22%; 90 day, 35%

Readmission Rate vs. Time to Readmission (days)
Cystectomy Readmissions Exceed all other Urologic Surgeries

The burden of readmission for common major urologic surgeries from the 2012 NSQIP data.

Readmission intensity after cystectomy

77.3% readmitted within 2 weeks

Skolarus TA et al. J Urol. 2015
Reasons for readmission change over time

Hu M et al. Cancer. 2014 May 1; 120(9):1409-16.
Post Discharge Enhanced Recovery Framework

• Focus in the first few weeks after discharge
• Focus on modifiable readmission factors
  - Early follow-up may reduce readmissions by 20%!
  - Follow-up care should include vigilance in looking for complications

• Communication
  - Early PCP follow up
  - Early and frequent phone calls from the surgeon
  - Tele medicine
  - Mobile Apps

Take home messages

• ERAS Framework
  - Begins PRIOR to the actual admission
  - Communicate expectations

• Identify and treat comorbidities

• The ‘marathon’ runner paradigm
  - Physical Conditioning
  - Carbohydrate loading
Take home messages

• GI optimization
  - Avoid bowel prep
  - Minimize bowel handling intra-op
  - No NG tubes

• Reduce effects of opioids
  - Avlimopan – start prior to surgery
  - Non narcotic use intra-operative
  - Long acting local anesthetic
Take home messages

• Surgeon Factors
  - Expeditious surgery
  - Minimize blood loss

• Early Mobilization
  - Feed early
  - Walk early
Take home messages

• Patients should be ready to go home
  - Don’t tempt re-admission fate!

• Early detection, screening & prevention
  - The first 2 weeks after discharge are critical

• Expectations, expectations, expectations!
  - Tailor to the local cultures
ERAS (Enhanced Recovery After Surgery)

- A multidisciplinary approach involving surgeons, anesthesiologists, nurses, dieticians, and allied health professionals is one of the key paradigm shifts that is now needed to optimise recovery of our patients.
**Framework of Enhanced Recovery**

**Pre operative**
- Counseling
  - Teaching (written and verbal)
  - Expectations
  - Discharge plan
  - Stoma teaching
  - Stoma marking
- Optimization
  - Lungs
  - Cardiac
  - Prehabilitation
  - Nutrition
- Carb loading
  - No prolonged fast
- No bowel prep
- VTE prophylaxis

**Enhanced Recovery**
- Avoidance of salt and water overload
- Maintenance of normothermia
- Local anesthesia
- Antibiotics according to AUA Best Practices
- Alvimopan (FDA approved)

**Intra operative**
- Avoidance of salt and water overload
- Maintenance of normothermia
- Local anesthesia
- Antibiotics according to AUA Best Practices
- Alvimopan (FDA approved)

**Post operative**
- Pain control
  - Avoidance of opioids and toxicity
- Early mobilization
- Early oral nutrition
  - Nutrition drinks
- Avoid salt and water overload
- Ileus Control
  - Prevention of N/V
  - No NG tubes
  - No aggressive bowel regimen
- VTE prophylaxis
- Early follow-up

Baack Kukreja et al. BJUI. 2016
Thank You

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