

Evaluation of Gastrointestinal Complications Following Radical Cystectomy Using Enhanced Recovery Protocol

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Introduction and Objectives: Gastrointestinal (GI) complications are common after radical cystectomy (RC) and urinary diversion (UD). Enhanced recovery after surgery (ERAS) protocols aim to optimize GI function, and predicated on avoiding bowel preparation and nasogastric tubes, early feeding, focus on nonnarcotic pain management and the use of cholinergic and mu-opioid antagonists. We evaluated whether our institutional ERAS protocol was associated with changes in GI function and complication rates in the first 30 days after RC and compared them to our previous traditional method of postoperative care.

Methods: Using our bladder cancer IRB approved database, we identified 377 consecutive patients who underwent open RC and UD using our ERAS protocol from 5/2012 to 12/2015. Also, we identified a control group who were treated with traditional (non-ERAS) postoperative care using our institutional bladder cancer database (2003 to 2012). We compared bowel activity in the postoperative period as well as GI complications for the first 30 days. Postoperative ileus (POI) was defined as oral intake intolerance that persisted beyond 5 days after surgery or by nausea and emesis with accompanied abdominal distention requiring GI rest, or a nasogastric tube at any time postoperatively. Complications were recorded based on Clavian-Dindo system.

Results: A total of 145 patients on ERAS arm and 144 matched controls were included in the study. Median time from surgery to first bowel movement was 2 days in the ERAS arm and 5 days in the control group ($p=0.003$). GI complications within 30 days occurred in 19 (13%) patients with the ERAS protocol and 40 (27%) of controls ($p<0.001$); the most common GI complication was postoperative ileus (POI)/partial small bowel obstruction (pSBO) in both groups (7% vs. 23%; $p<0.001$) (Table 1). Nasogastric or gastric tube placement was required in 11 patients (7%) in the ERAS arm compared with 25 patients (17%) controls ($p=0.01$), while Total parenteral nutrition was required in one (0.6%) patient in the ERAS cohort and 8 (6%) controls ($p=0.02$). Median length of hospital stay (LOS) was significantly shorter in ERAS cohort compared to controls [4 (range, 3 – 16) d vs. 9 (range, 5 – 23) d; $p<0.001$].

Conclusions: Our institutional ERAS protocol for RC was associated with significantly shorter time to bowel function recovery, fewer GI complications, and a shorter LOS. This protocol should be considered to reduce GI morbidity associated with open RC.

Table 1. GI-related complications in patients on ERAS protocol vs. matched non-ERAS

| | ERAS patients (n=145) | Non-ERAS controls (n=144) | P value |
|---|----------------------------------|--------------------------------------|------------------|
| 30-day GI complication rate (%) | 19 (13) | 40 (27) | 0.003 |
| Ileus/pSBO (%) | 10 (7) | 34 (23) | <0.001 |
| Intractable nausea/vomiting (%) | 4 (3) | 3 (2) | 0.5 |
| Need for NG/G-tube (%) | 11 (7) | 25 (17) | 0.012 |
| Need for TPN (%) | 1 (< 1) | 8 (6%) | 0.02 |
| C. Diff diarrhea (%) | 3 (2) | 1 (<1) | 0.3 |
| 30-d readmission rate due to GI complication (%) | 2 (10) | 2 (5) | 0.1 |

Keywords: bladder cancer, cystectomy, enhanced recovery, GI complications