Enhanced recovery and outcomes in pancreatic cancer surgery

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Introduction

Enhanced Recovery after Surgery (ERAS) pathway accelerates recovery and reduces morbidity. Evidence regarding ERAS in pancreatic cancer surgery is still evolving. It has been found to be associated with reduced length of stay, morbidity and costs. We implemented ERAS in patients undergoing pancreatic cancer resections. The objective was to assess compliance with various components of ERAS and evaluate the impact on outcomes.

Methods

Study design: Institutional Review Board approved Prospective observational audit.
The team was educated prior to implementation of ERAS. Patients were followed up till 30 days postoperatively. Clavien Dindo (C&D) classification was used to grade complications (1, 2 – Minor, 3,4 - Major). Data was recorded regarding the compliance with the protocol and outcomes in terms of postoperative morbidity and mortality. In addition, we compared year 1 vs year 2 and year 3 to explore the temporal effect of implementation.

Results

392 patients underwent pancreatic resections (Feb 2014 - Dec 2016). Median age was 56 years (IQR 46 -62). Overall compliance with ERAS elements was 84% and compliance of individual variables is listed in Table 1. Major complications occurred in 119 patients (30.3%) and 13 patients died (3.3%). Major complications decreased over a period of time from 45% in the first year to 31.2% in the third year after implementation. There was a similar reduction in mortality (4.1% vs. 1.4%). ERAS elements didn't influence postoperative stay.

Table 1: Compliance with individual ERAS elements and Outcomes (overall and change over time).

Variables	Overall N = 392(%)	2014 N =97(%)	2015 N = 151 (%)	2016 N = 144 (%)
Preoperative				
Counselling	375 (95.6)	93(98.9)	144(98.6)	139 (96.5)
VTE prophylaxis	355 (90.5)	76(81.7)	139(95.2)	140 (97)
Preoperative Carbohydrate load	346 (88.2)	83(89.2)	137(93.8)	126 (88.1)
Selective Bowel preparation	57 (14.5)	12 (12.3)	30 (19.8)	16 (11.1)

Selective Sedation	5 (1.2)	2 (2)	1 (0.6)	2 (1.4)
Intraoperative				
Mid thoracic Epidural	369 (94.1)	91(94.8)	142(94)	136 (95.1)
Antibiotic prophylaxis	386 (98.4)	93(98.9)	150(99.3)	143 (99.3)
Antiemetic prophylaxis	365 (93.1)	84(89.4)	149(98.7)	132 (91.7)
Temperature management	248 (100)	97(100)	151(100)	144 (100)
Postoperative				
Adhered to Structured mobilisation	350 (89.2)	76(80.9)	142(94.7)	132 (91.7)
Mobilisation started POD#	1 (1 -1)	1 (1-1)	1 (1-1)	1 (1-1)
Target achieved POD# (Ability to perform activities of daily living)	4 (3-6)	5 (4-7)	4 (3-5)	5 (3-7)
Complications				
Major C &D (grade 3-4)	119 (30.3)	41 (45)	42(27.8)	45(31.2)
Mortality	13(3.3)	4 (4.1)	7(4.6)	2 (1.4)
Postop stay (Median, #)	12 (9-18)	11 (10-20.5)	13 (10-20)	12 (9-17)
Readmissions (days)	23 (5.8)	10(10.3)	3(1.9)	10 (6.9)

N - Number of patients we were compliant. POD-Postoperative day, #-Interquartile range.

Conclusions

ERAS pathway is associated with reduced incidence of major complications and mortality suggesting that implementation of ERAS is safe in pancreatic cancer resections.