

Enhanced Recovery Clinical Pathway for Pancreatic Surgical Patients Decreases Unanticipated ICU Admissions

Brian J Specht, MD, Hayden P Kirby, MD, Morgan R Marino, MD, Lyla Hance, MPH,
Hong J Kim, MD, Lavinia M Kolarczyk, MD, Robert S Isaak, DO

INTRODUCTION

Enhanced Recovery after Surgery (ERAS) pathways are designed to optimize perioperative care and achieve earlier recovery following surgery by maintaining normal physiologic function and reducing the surgical stress response from procedures^{1,2}. This is accomplished by standardizing the anesthetic management, using goal directed fluid management strategies, and employing multimodal analgesia. ERAS pathways for pancreatic surgery have shown many positive impacts on patient outcomes including hospital length of stay (LOS)³. Implementation of an ERAS clinical pathway for pancreatic surgery at our institution has reduced hospital LOS from nearly 11 days to 8 days⁴. The aim of our study was to quantify the number of patients admitted to the ICU after Whipple (pancreaticoduodenectomy) procedure both before and after the implementation of an ERAS pathway. The primary endpoint was the number of ICU patient admissions at any point in the surgical admission.

MATERIALS AND METHODS

A retrospective chart review was performed to identify historical control patients having a Whipple procedure, managed using traditional (non-ERAS) practices at a single institution from January 2013 to June 2014. Prospective data was collected for patients having the same surgical procedure from July 2014 to February 2016 managed using an ERAS clinical pathway specifically designed for pancreatic surgery. Charts were reviewed for ICU admissions at any point in the primary surgical admission, starting from the POD 0 until the time of discharge.

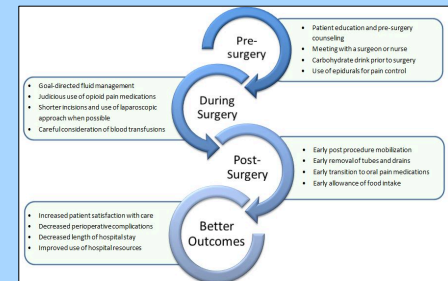
RESULTS

Whipple Procedures	Controls 1/10/2013-6/13/2014	ERAS 7/10/2014-2/12/2016	P Value
N=	42	46	
Immediate OR to ICU admission	9.5% (4/42)	0% (0/46)	0.048
All ICU admissions during hospitalization for surgery (POD 0 to discharge)	16.7% (7/42)	6.5% (3/46)	0.184

Table 1: Whipple patients admitted to the ICU before and after the implementation of an ERAS pathway.

Demographics	Controls	ERAS
Age	61.9 +/- 13.2	65.7 +/- 10.3
BMI	27.1 +/- 6.88	26.6 +/- 4.67
Mean ASA Status	3	3
M:F	21:21	27:19
Estimated Blood Loss (mL)	691 +/- 387	609 +/- 333

Table 2: There was no significant difference between the groups regarding age, BMI, ASA status, gender or estimated blood loss



CONCLUSIONS

- Standardizing the perioperative care with an ERAS clinical pathway improved the quality of care, expedited recovery, improved outcomes, and optimized use of health care resources for patients undergoing a Whipple procedure.
- ICU admissions increase hospital expenditure and strain resources⁵. Here we show how an ERAS clinical pathway for Whipple patients decreased these costly unanticipated ICU admissions after surgery by nearly 61%.
- Moreover, since the overall ICU admissions rate was decreased, this suggests that the ERAS clinical pathways also contribute to prevention of postoperative complications such as respiratory depression, volume overload, and mental status changes that lead to ICU admissions.

REFERENCES

1. Surgery 2011 Jun;149(6):830-40
2. Arch Surg. 2009;144(10):961-969
3. HPB (Oxford) 2014 April 18
4. Anesthesiology 2015; 123:750-758
5. Crit Care Med. 2005 Jun;33(6):1266-7